12-2012

Trait Differences in Gender in Technology Use and Study Habits of Rural Community College Students

Phillip Marc Wilson
University of Arkansas, Fayetteville

TRAIT DIFFERENCES IN GENDER IN TECHNOLOGY USE AND STUDY HABITS OF RURAL COMMUNITY COLLEGE STUDENTS

TRAIT DIFFERENCES IN GENDER IN TECHNOLOGY USE AND STUDY HABITS OF RURAL COMMUNITY COLLEGE STUDENTS

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Education in Higher Education

By

Phillip Marc Wilson
Hendrix College, 1995
Bachelor of Arts in Political Science
University of Arkansas
Master of Business Administration, 1997

December 2012
University of Arkansas

ABSTRACT

The purpose for conducting the study was to explore the trait differences by gender of the study habits and technology use patterns of rural community college students. Significant research and data presently exists at the university level specific to study habits and technology use, but little research had been conducted targeting those topics in a rural community college setting.

The following questions guided the research:

1. What were the study habits of rural community college students?
2. How did rural community college students use technology?
3. Were there significant differences, by gender, in the study habits of rural community college students?
4. Were there significant differences, by gender, in technology use of students in a rural community college?

A single, rural two-year community college located in the southwestern United States served as the target for the study. The community college was set in a rural area located approximately 90 miles from the nearest city with a population of 40,000 or more. A stratified selection process was used to choose the students who would complete the survey. A purposeful sample that was statistically representative of the population yielded a potential of 204 students available for survey, and 153 usable surveys were available for analysis (75% return rate).

This dissertation is approved for recommendation
to the Graduate Council.

Dissertation Director:

_____
Dr. Michael T. Miller

Dissertation Committee:

_____
Dr. Kenda S. Grover

_____
Dr. Adam A. Morris

DISSERTATION DUPLICATION RELEASE

I hereby authorize the University of Arkansas Libraries to duplicate this dissertation when needed for research and scholarship.

Agreed _____
Phillip Marc Wilson

Refused _____
Phillip Marc Wilson

ACKNOWLEDGMENTS

First of all, I would like to thank my wife, Kristi. In the six years that it has taken me to complete my doctorate, she has always been my constant supporter and biggest fan. Her unconditional love has provided me with the strength to continue on when there were so many times that I wanted to stop. It will always be my life's goal to be as good a person as she is. Aaron, Marc David, Rachel, Katherine, and I are blessed to call you mom and wife.

To my beautiful children Aaron, Marc David, Rachel, and Katherine, thank you for understanding that Dad could not always be around and for providing me a sense of purpose that I did not know existed. I hope that I am a role model who you can be proud of.

I would like to thank my advisor and dissertation chairman, Dr. Michael Miller. Your commitment to student success is humbling. You never gave up on me, supported me at every turn, and provided the proper advice at every step. Special thanks to my committee members, Dr. Kenda Grover and Dr. Adam Morris, for their attention to detail, suggestions, and knowledge. I could not have had a better group of educators to work with.

I want to thank all of my colleagues at Rich Mountain Community College. RMCC is as fine example of a model rural community college as there is. Specifically, I want to thank Dr. Steve Rook and Dr. Krystal Thrailkill who provided me with constant support and advice and the occasional kick in the pants when needed.

Lastly, there were so many friends along the way that helped me achieve this goal. To all of them I humbly say thank you. I could not have accomplished this without your help.

DEDICATION

This dissertation is dedicated to my father, Marc Wilson, and my mother, Sue Wilson. Words simply cannot show how important these two people are to me. It is my prayer that I can be the parent to my children that they have been to me. Their love for their children knows no bounds.

TABLE OF CONTENTS

CHAPTER I

Introduction

> American community colleges are much like the nation that invented them. They offer an open door to opportunity to all who would come, are innovative and agile in meeting economic and workplace needs, and provide value and service to individuals and communities. Little wonder that they are increasingly emulated around the world and have become the largest and fastest-growing segment of U.S. higher education. (Boggs, 2010, p. 1)

From their humble beginnings as a junior college near Chicago, Illinois, today's community college enrollment accounts for nearly 50% of all U.S. undergraduates (National Center for Education Statistics [NCES], 2007). By the year 2005, the nation had a total of 1185 community colleges. Community colleges are by tradition and practice open to all and are less expensive than four-year public institutions, making them the most democratic of institutions by providing universal higher education access to its students (Cohen & Brawer, 2008; Vaughan, 2006).

The National Commission on Community Colleges ([NCCC], 2008) reported that there is a community college within a short commute of 90% of the United States' population, and that these institutions provide a learning opportunity for individuals in hundreds of small and isolated rural communities. According to the American Association of Community Colleges (AACC, 2012), today's community colleges are:

> providing open access to postsecondary education, preparing students for transfer to 4-year institutions, providing workforce development and skills training, and offering noncredit programs ranging from English as a second language to skills retraining to community enrichment programs or cultural activities. (Community College Trends and Statistics, section, para 1)

Unique programs for special populations such as minorities, women, veterans, remedial, and first-generation college students often separate the community college from its higher education partners, such as those at the four-year level (Baldwin, 2007).

Community colleges play a crucial role in training the nation's future workforce (NCCC, 2008). According to Boggs (2010), community colleges develop programs and courses of study in response to the needs of local economics, work closely with business and industry, government, and other education partners. They also provide access to higher education to the most varied and multicultural student body in history. A community college student's age, ethnicity, nationality, socioeconomic status, and degree of disability make up its vast diversity. They have also become the institutions of choice for American workers needing to upgrade their training levels and for displaced workers preparing to reenter the workforce with a new and updated skill set (Boggs, 2010).

According to a policy paper by the Rural Community College Initiative ([RCCI], 2001) *Expanding Economic and Educational Opportunity in Distressed Rural Areas,* "global economic forces and technological change have caused many rural communities to lose their historic job base of mining, farming, timber, or low-wage manufacturing" (p. 7). There is a "sense of powerlessness" (p. 7) among the leadership of the rural community college administrators and a concern as what to do to with their high levels of poverty and fracturing cultural base. In almost all of these rural areas, educational levels were found to be low.

Miller and Tuttle (2007) wrote the following about the rural community college:

> Rural community colleges certainly play a distinct role in the communities, mirroring some of the traditionally implied roles of their 4-year college and university counterparts. They have a unique distinction, however, in terms of serving small towns in ways that 4-year colleges do not. They are socially enabling institutions that improve and help form the identity of rural America, both in terms of individual communities and in terms of individual themselves. (p. 126)

Many students entering rural community colleges face a multitude of challenges. Academic preparedness, priority conflicts, financial capabilities, and possible work responsibilities are concerns, not to mention learning the unwritten rules of academic language and culture.

Upon matriculation, these students must also prepare themselves mentally for the everyday rigors of being on time, attending class regularly, managing study time, and the difficulty of advanced academic obligations. While these are stressful issues to almost all college students, they are particularly taxing to the rural community college student due to many of them being academically underprepared for college-level work.

Purpose of the Study

The purpose for conducting the study was to explore the trait differences by gender of the study habits and technology use patterns of rural community college students.

Research Questions

The following questions guided the research:

1. What were the study habits of rural community college students?
2. How did rural community college students use technology?
3. Were there significant differences by gender in the study habits of rural community college students?
4. Were there significant differences by gender in technology use of students in a rural community college?

Delimitations and Limitations

The researcher acknowledged the following delimitations of the study:

1. This research was limited to a rural community college located in the west-central part of Arkansas. All participants in the study were enrolled in the abovementioned college.

The college is approximately 90 miles from any city with a population of greater than 40,000 people.

2. The date used for this study was limited to only one semester of collection, namely spring, 2012.
3. The findings from this study applied to only one rural community college; therefore, the inferential capacity of the findings was limited.

The researcher acknowledged the following limitations of the study:

1. Validity and reliability measures were put into place to protect the data; however, the instrument was developed from a collection of existing literature and a prior survey instrument.
2. Classroom instructors distributed the surveys. Because of potential human error, there was the possibility of response bias by the survey respondents.

Assumptions

The researcher acknowledged the following assumptions of the study:

1. The study accepted the assumption that the survey participants accurately and honestly reported their demographic data.
2. The study accepted the assumption that the sample did comprehensively represent the population of the rural community college surveyed.
3. The study accepted the assumption that rural community colleges possess challenges different from non-rural community colleges.

Definition of Terms

The following definitions were specific to this study:

1. *Culture:* values, beliefs and practices shared by a group of people (Ziegalhn, 2001).

2. *Distance Education:* an instruction and learning practice, utilizing technology and involving students and teachers who are separated by time and space (Burnell, 2002).
3. *Non-Traditional Student:* NCES broadly defines the non-traditional student by using a classification scale composed of three parts (Choy, 2002):
    a. Minimally Non-traditional
    b. Moderately Non-traditional
    c. Highly Non-traditional

Non-traditional status is based on the presence of one or more of seven possible non-traditional characteristics: minimal = 1, moderate = 2 or 3, highly 4 or more.

The seven characteristics were:

1. Older than typical age
2. Part-time attendance
3. Independent of parents
4. Working full time while enrolled
5. A single parent
6. Have dependents
7. A recipient of a GED or high school completion certificate

4. *Rural Community College:* a small community college with an enrollment of twenty-five hundred students or less (Katsinas, 2003).
5. *Social Networking Site:* online sites where users can create a profile and connect that profile to other profiles for the purpose of making a personal network; examples of such sites include Facebook, My Space, and Twitter (Lenhart, Madden, Macgill, & Smith, 2007).

6. *Technology:* Merriam-Webster Dictionary 11th Edition, (2005) defines technology as:
    a. A capability given by the practical application of knowledge
    b. A manner of accomplishing a task especially using technical processes
    c. The specialized aspects of a particular field of endeavor
7. *Traditional Student*: NCES defines this student as one who attends higher education on a full time basis immediately after graduation from high school with a diploma, relies on parents for financial aid and works only part time for some portion of the school year (Choy, 2002).

Significance of the Study

Very little, if any, research had been done specifically targeting study habits and technology use patterns of rural community college students. The results of this study provide rural community college instructors, administrators, educators, and other researchers with data regarding the use of modern technology by students. Also, the findings of this study will improve the general knowledge within the community college as it relates to student study habits. Consequently, this study will endeavor to widen the knowledge base in terms of study habits and technology use of the community college student in a rural setting. Rural community colleges, defined by their geographic location, comprise approximately one-third of all community colleges operating in the United States (Miller & Tuttle, 1998). More recent attempts to classify this group of colleges have resulted in the finding of 922 individual rural campuses in 533 community college districts (Katsinas, 2003). The above mentioned 922 rural institutions represent thousands of students, but with the exception of a few authors and researchers, very little has been researched about this select and diverse group. The available literature indicated that researchers who study rural community colleges have a tendency to

focus on more common, broader issues such as remediation, student engagement, and academic performance.

CHAPTER II

REVIEW OF RELATED LITERATURE

Profile of the Community College Student

The American community college student has never been defined with an easy one size fits all definition. The diversity of this student body separates itself from all forms of higher education. These students represent traditional and non-traditional students looking for career and job training, students seeking transfer to a four-year university, or the student purely interested in leisure study. As Cohen and Brawer (2008) noted, community college students are typically interested in a local, reasonably priced, quality institution of higher learning.

Many community colleges will provide restriction-free, open admission for students, meaning that a typical admission requirement for a degree or certificate program would be completion of a high school diploma or equivalent education (GED). This flexibility will allow these institutions to embrace racial diversity, financial diversity, and instructional diversity. This capability will provide the community college student with a career potential normally not found at the conventional four-year institution. Fortunately, the community college student will, regardless of age, financial ability, or past educational achievement, be able to achieve the foundational and fundamental attributes of their chosen career aspirations. They can pursue with confidence the opposite ends of the educational spectrum and everything in between. The community college will accept all varieties and capacities of the potential learner. There is no doubt that the average community college is a melting pot, and they are strategically positioned so that they can turn this collection of diverse students into a population of educated and thriving learners (Pusser & Levin, 2009).

Age will be a critical factor when discussing community college students. There is a false perception that most community college students are much older than traditional college students. According to the Community College Student Survey of Engagement (CCSSE), 68% of the 400,886 students surveyed are under the age of 24 (2009). In 2003, a third of the community college population was generally aged 30 or older (Knapp, 2003). In 2009, CCSSE reported that 23% of surveyed students were between the ages of 25 to 39. The vast age range, 18-49, clearly presents unique challenges for the community college, its faculty, and staff.

The 2009 CCSSE showed that females composed 59% of all their survey respondents. The trend for more females than males enrolled in community colleges began in the 1970s (Provasnik & Planty, 2008). Based on the gender trend analysis from the National Center for Educational Statistics, the gap differential has only widened since the 1970s. There are many examples of programs that targeted at-risk female populations in community colleges. Federal programs such as the Carl Perkins legislation and the Temporary Assistance for Needy Families (TANF) have provided specific educational conduits for women to succeed in the community college environment. Data shows that women produce better grades, come to class more prepared, and work harder than they might think possible to meet an instructor's standards (CCSSE, 2003; 2006; 2009).

According to the NCES, minority students compose approximately 33% of the student population in a community college, with the bulk of them being either African American or Hispanic (2009). Admissions placement scores show that minority students are often more academically unprepared than their white classmates. NCES also reported that almost 15% of community college students speak a language other than English in their home. A commissioned National Association of System Heads (NASH, 2009) report called *Charting a Necessary Path:*

The Baseline Report of Public Higher Education Systems in the Access to Success Initiative (A2S) found some alarming statistics about the community college minority student population:

- Within four years of entry, less than one-third of all freshmen entering two-year institutions in the A2S systems completed either a certificate, an Associate's degree, or transfer to a four-year college within the system. For underrepresented minorities, the success rate is lower (24%) than for other students (38%). But for students receiving Pell Grants, the success rate (32%) is the same as for other students (p. 9).
- Low transfer rates are a particular concern. Only 12% of underrepresented minority freshmen, and 16% of Whites and Asians, transfer from two-year colleges into bachelor's degree programs in the system within four years (p. 9).
- Although 80% of community college freshmen intend to earn a bachelor's degree, roughly 7% of minority students who enter A2S community colleges earned bachelor's degrees from system institutions within 10 years (p. 9).

Family dynamics will play a vital role as to why a student attends a community college. The Institute for Women's Policy Research (2010) wrote that:

> of the over 6 million students earning college credit at community colleges, 1.7 million (27%) are parents. Of those, about 1 million are single parents, more than twice the proportion at 4-year institutions. Three quarters of the single parents in college are women. (p.1)

Approximately 36% of students are still listed as a tax dependent by their parents or guardians.

Nearly half of today's community college students will come from a family whose father or mother ever attended any postsecondary institution. These students, often defined as first-generation students, are faced with special challenges that do not exist for students who are not first generation (Tinto, 1993). Research has shown that students whose parents did not attend or graduate from a college or university were more likely than their non-first-generation

counterparts to be less academically prepared for college, to have less experience and knowledge in the methods of enrolling and paying for college, and to have more challenges in adjusting themselves once enrolled in college (Choy, 2001). First-generation students have often been identified by the community college so that special attention may be given to them. As a whole, this subpopulation of students often looks for completion of short-term programs rather than completion of the associate's or bachelor's degrees. They transfer at a 38% rate to a four-year institution as compared to 52% of all other students that transfer (CCSSE, 2003). The importance of understanding this subpopulation is critical because of the importance a higher education has in helping find employment opportunities, financial stability, and civic engagement.

The community college is well situated for the student who possesses a disability, whether physical or cognitive. Nearly 11% of the community college student body claimed having a disability (Savukinas, 2003). This number would be larger if all of the students reported their disability. In higher education, a student must declare a disability before the college can provide services and academic support (Hawke, 2004). Many students with disabilities will make their first collegiate experience attempt at a community college (Savukinas, 2003). Philosophically and legally, the community college is better situated to handle students with disabilities because the institution has invested substantial dollars into a wide variety of specialized services that focus directly on serving students with disabilities and special needs (Chang & Logan, 2002).

The open door policy for admission to a community college translates into many students being academically ill prepared for college level work. Forty-two percent of all first time entering students enroll in at least one developmental course (Wirt, Choy, Provasnik, Rooney, &

Tobin, 2004). Reading, writing, and mathematics are common remedial courses. Most of these remedial students spend more than one year completing their developmental coursework. Remedial education is expensive for both the student and the community college, and it immediately places the student behind the completion of a program of study on time. Research has shown that reading may be the "most serious barrier to degree completion and is associated with more total remediation coursework and with lower rates of degree attainment than other remedial course taking patterns" (Wirt, Livingston, Choy, Provasnik, Rooney, & Tobin, 2004, p. 63).

Reality tells us that the community college is a mixture of educational intent, and that goal attainment is varied. Almost 85% of community college students have hopes to complete a degree or certificate program. CCSSE (2003) showed a correlation between student engagement and success. The researchers claimed that:

> students who desire attainment of a certificate, attainment of associate degree, or transfer as their primary goal tend to be substantially more engaged than their non-credential seeking counterparts. They also are considerably more likely to participate in developmental education, study skills courses, and college orientation. Finally, the credential-seeking students indicate stronger education outcomes as a result of their experience in college. (pp. 15-16)

Community college students are generally employed as part-time or full-time workers, (CCSSE, 2009; NCES, 2009), with nearly 85% of them reporting being employed. With a percentage that high, the risk of community college students not fulfilling their educational goal is heightened. Dadgar and Weiss (2011) wrote:

> overall, our analysis suggests that there may be some negative academic effects of working while enrolled, but the effects seem to be relatively small. Given the potential to earn additional human capital through work experience for students who are employed while enrolled, working while enrolled should not necessarily be discouraged for community college students. (p. 27)

Logically, a community college must be diligent at scheduling salient classes that provide support for this group who make up over three-quarters of the college population.

The Contemporary Community College

Community colleges are frequently named after cities, states, counties, geological regions, famous historical people, and assorted other situations. Because these schools are unique to their environments, community colleges on some occasions are given catchy nicknames that stick and become a part of the local folklore. Other nicknames possess a more subtle attribute, i.e., college of last resort, second chance U, and similar ilk. Pusser and Levin (2009) addressed this subject by writing:

> Community colleges in the United States have been described many ways over the years, as "democracy's college," the open-door college," and the "people's college." It would now seem appropriate to add "the crisis college" to that list. Many community colleges today face a funding crisis, enrollment growth that strains capacity, unsustainable rates of development education, unpredictable shifts in labor market demand, growing competition for enrollment and revenue from for-profit providers, and a loss of leadership of daunting proportions through retirements.
>
> But perhaps more important is that community colleges acutely experienced crisis in the broader political economy, including global recession, the continuing privatization of the public sector, and the changing character of the knowledge economy of the 21st century. This is because they are predominantly public institutions with student bodies that are generally less affluent than other institutional types, have low endowments, and are exceptionally dependent on legislative support. (p. 4)

In 2008, the U.S. Department of Education and NCES produced a special report titled, *The Condition of Education, 2008*. From this report came a special supplement dedicated to community colleges (Provasnik & Planty, 2008). This analysis provided a descriptive profile of the contemporary community college in the United States. According to its findings, there were 1045 community colleges in the United States that enrolled over 6.2 million students. Enrollments in community colleges accounted for 35% of all postsecondary students enrolled

that year. The report showed that the "community colleges are distributed more evenly across the community types, with 29% each in cities and rural areas, 24% in town, and 18% in suburban areas" (p. 2).

According to the report, state and local government agencies were found to be the primary source of funding for the colleges. The research found that 38% of revenues came from state funding, 20% from local funding, 15% coming from the federal government, and the remainder being produced from student tuition and fees. A community college's average expense per full-time-equivalent student (FTE) was nearly 3 times less ($10,550) when compared to a four-year college or university ($31,900). However, these numbers need to be taken in a context. Community colleges enroll many more part-time students than four-year institutions. They also lower instructional costs that include fewer faculty members who possess doctorate degrees, employ significant numbers of contingency and adjunct faculty, and faculty are not required to spend a large portion of their time on research and non-instructional activities. Faculty members are predominantly hired to teach.

Academic Transfer

The contemporary community college has multiple missions and understandings (Cohen & Bower, 2008); however, one of the most polarizing is the role in providing academic transfer. There has been much scholarly attention paid to the success of the efficacy of the community college specifically pointed toward the success of transfer outcomes (Brint & Karabel, 1989; Shulock & Moore, 2007). As access to higher education continues to grow, community colleges will continue to produce transferable students. With initiatives such as President Barack Obama's goal of having 8 million new college graduates by 2020, community colleges will take

an increasingly dominant role in providing a clear path for transfer to the baccalaureate degree (NCCC, 2011).

With the continuous rising cost of higher education, community college enrollments are producing more transfer eligible students. A Brookings Institute study produced the following statement:

> Confronted with high tuition costs at four-year institutions, a weak economy, and increased competition for admissions to four-year colleges, students today are more likely than at any other point in history to choose to attend a community college. (Goldrick-Rab, Harris, Mazzeo, & Kienzl, 2009, p. 10)

Generally, community college students want to transfer to a baccalaureate granting institution, and transfer has always been a key goal for a significant percentage of incoming community college students (CCSSE, 2003, 2006, 2009). Rosenbaum, Deli-Amen, and Person (2006) found that many students who began their higher education career only looking to earn an associate's degree or less, often found their way to earning a baccalaureate credential.

Historically, four-year institutions have not focused on the two-year transfer student. Many four-year institutional leaders believe that there are ample high school graduates available to recruit and admit. However, with the prevalence of community colleges within driving distance of most students, accessibility has challenged the four-year notion of the full cupboard awaiting them and their freshman class (AACC, 2009).

Today's community college also provides a changing demographic and increased diversity for higher education (NCCC, 2011). With open-door admission standards and the accessibility of the community college, students from underserved populations and races are creating a diversity not generally seen at four-year institutions. The Center for American Progress wrote that community colleges are a major gateway for transfer to the four-year institution, and "community colleges have designed transfer programs to serve specific groups of

students, often those from underrepresented backgrounds in various discipline" (Pusser & Levin, 2009, p. 3).

Dual Enrollment

Dual enrollment programs are frequently utilized by community colleges as a way to connect high school students with higher education while still maintaining their secondary educational status. These programs are often called "concurrent enrollment" or "dual-credit" and have existed for over 30 years (Bailey, Hughes, & Karp, 2002). Dual enrollment students earn high school credit needed for secondary graduation while enrolled in a college level class, thus defining the "dual" meaning that the student will receive credit on both sides. Dual enrollment allows a student to experience college before their high school days have ended. Proponents of dual enrollment argue that these programs provide the following (United State Department of Education, 2004, p. 1):

- Prepare students for the academic rigors of college by exposing them to the type of intense curriculum that research has found to promote bachelor's degree attainment (Adelman, 1999, p. 1).
- Lower the cost of postsecondary education for students by enabling them to earn free college credits (depending on state policy) and shorten their time to degree completion (Orr, 2002, p. 1).
- Provide students with more realistic information about the academic and social skills that they will need to succeed in college through their participation in actual college courses (Orr, 2002, p. 1).

- Provide curricular options for students, particularly in high schools that, due to small size or inadequate funding, are unable to offer interesting and exciting electives (Adelman, 1999, p. 1).

Remedial Education

"One of the community colleges most important functions is to provide remedial instruction for traditional-age and adult students who are not prepared for college-level work" (Oudenhoven, 2002, p. 35). Grubb and Associates (1999) defined remediation as "a class or activity intended to meet the needs of students who initially do not have the skills, experience or orientation necessary to perform at a level that the institutions or instructors recognize as 'regular' for those students" (p. 174). Remedial classes, sometimes called developmental education, have been an established part of the community college experience and curriculum since the beginning years of the 1900s (Cohen & Brawer, 2008). Levin and Calcagno (2008) described the community college remedial student as one that could come from any of the following:

- a student who has done poorly in high school in all subjects
- a student who is deficient in just one subject matter
- an older student, who might have performed well in high school, but has developed rusty skills due to lack of use
- a student who has poor study habits
- a student with learning problems or disabilities
- an immigrant student who may have the foundational academic skills for college-level work, but has difficulty with speaking and comprehending English

Remediation at the community college level is a complex issue. Research produced in 2004 showed that 63% of community college students participated, on average, in a year or more of remedial education (Choy, 2004). The literature also showed that community college students who passed remedial classes were found to be more likely to graduate than similar students who were not required to take remedial coursework (Bahr, 2010). Almost all four-year institutions have admission requirements and with most community colleges having open admission policies, remediation is predominately occurring at the community college level. At the community college level, the cost associated with remediation is substantially lower than that at a four-year institution (Bettinger & Long, 2007). Jenkins and Boswell (2002) found that at least 10 states prevented or discouraged public four-year institutions from offering and teaching remedial education.

Remedial education is a fundamental component of the community college mission and the community college student. The underprepared community college student body is enormous (NSSE, 2011; CCSSE, 2011). As long as the community college continues to provide an opportunity to a better livelihood, it will be faced with the challenges and opportunities presented by developmental education.

Lifelong Learning and Workforce Training

"Postsecondary noncredit education has become increasingly common, and at many community colleges, noncredit education enrolls more students than credit programs do" (Van Noy & Jacobs, 2009, p. 1). Lifelong learning and workforce training are forms of post-secondary noncredit education and are not new phenomena at two-year institutions. Two-year institutions can easily shape and mold themselves based upon the ever changing and dynamic demands put on by today's political and business leaders and workforce needs. Most community

colleges have in their mission a statement pertaining to community education (AACC, 2011). While the main focus of the community college is educating its students via a degree or formal certificate, the local and global economic influence has driven the educational agenda more towards the needs of business.

Faced with ever changing technological and production needs, many industries have looked at the community college as a means to provide the training necessary to keep their employees current and educated on new or remodeled skill sets (Dougherty & Bakia, 2000). Most companies looking for workforce training realize that the two-year institution can provide inexpensive and more personal training, and they can tailor the content in a customized form so that it may be delivered in a different model, such as being offered on the weekend, and in a manner compatible with business and industry techniques (United States Government Accountability Office, 2008). Community colleges learned that their ability to deliver a specialized training affords them a strategic advantage over the four-year institutions with respect to business and industry needs.

Internally, community colleges have a strong incentive for responding to the needs of business and industry. Any exposure of the community college to a potential workforce or lifelong learning student creates a potential future student or relationship (Dougherty & Bakia, 2000). By bringing employed workers to a collegiate environment, the possibility of enrolling those students into a broader educational plan is possible. Most two-year institutions receive some sort of local tax to offset some of their costs. The local taxes and appropriations that come from state and federal entities allow for a competitive advantage that a for-profit training organization might not possess. As a function of meeting the training needs of business and

industry, the community college has also been able to use a new revenue stream that did not previously exist (Johnson, 1995).

This remainder of the literature review is divided into the following six general areas: technology in higher education, utilization of modern technology by college students, technology in college student engagement, distance education and social technologies, study habits, and summarization.

Students entering college today are expected to be more technologically literate than their counterparts in years past. The type of technology experiences that a student possesses will greatly impact their success rate in college (Karsten & Roth, 1998). Specific classes specify that entering students must arrive on campus prepared to use a computer and its software applications (Twale & Schaller, 2003). The successful student of today must be proficient in computer use and have Internet access. Basic technological functions and capabilities are essential for the student to be successful in coursework, assignment preparation, term papers, and other related academic pursuits. Students need to arrive on campus capable of using an operating system(s), word-processing software, the Internet, and electronic mail (Olsen, 2000). Technology such as cell phones, Instant Messaging, Facebook, MySpace, and other social networking technology have become widespread in today's college undergraduate society (Olsen, 2000).

For many years the term *technology* was related to the application of science. Today, technology is defined at times as "innovation in action and it involves the generation of knowledge and processes to develop systems that solve problems and extend human capabilities" (International Technology Association, 2002, p. 22).

Historically, society has utilized many methods to communicate with each other. Tapscott (1998) showed that in the history of communication methods, the use of technology has

surpassed other inventions, for example, the printing press, telephone, or television. By the beginning of the twenty-first century, the Internet became the de facto standard resource used by citizens for acquiring data and information (Wang, 2004).

Technology in Higher Education

The exponential growth of technology has continued at an upward rate, with technological effects being assimilated and instituted by society and educational institutions. Wang (2004) reported that there is clear evidence to show that technological influences are being integrated and applied by society more quickly than they were in the past. Simply stated, most of the technological changes seen today were not imagined a decade ago. Information technology has impacted all of the social institutions and dramatically transformed how people work, play, and learn (Duderstadl, Atkins, & Van Houweling, 2002).

Technology and the way it is used by students and higher education institutions has developed and changed rapidly over the past several years (Prensky, 2001a). The ability to understand the effects of information technology in relation to student development and the skills needed to use that technology are of the highest priority (Kleinglass, 2005). Millennials and traditional students have grown so accustomed to technology that they expect it as a standard tool along with well-developed systems in place to operate it. According to Flowers, Pascarella, and Pierson (2000) computers and information technology have changed the way teachers teach and students learn. Technology has had a profound impact on both the mission and function of the higher educational institution and the total student college experience (Kleinglass, 2005).

Today's college students consider the Internet an extension of everyday practice. The Internet as a tool has allowed them to communicate with family, friends, and instructors, perform research, and to view the traditional classroom setting as only a part of the learning environment.

The "post-Internet creation" college student has become aware of the transition from the familiar "brick" classroom setting to the "click" virtual setting (Jones, 2003).

Utilization of Modern Technology by College Students

A study by Junco and Cole-Avert (2008) explained the importance of today's technology and its use and impact on college students of America. They noted that student affairs professionals fall behind in their acceptance and use of social media technologies that students appreciate and practice.

Students use the Internet, e-mail, instant messaging (IM), blogs, and social networking websites like Facebook, My Space, and Twitter at higher rates than individuals from any other generation (Junco & Mastrodicasa, 2007). Jones (2003) noted that today's college students are the most wired generation to date. While college students expect faculty and student affairs staff to use the newest technologies to communicate with them, research has shown that many institutions are not ready to handle these direct and indirect demands (Junco & Mastrodicasa, 2007). Data from the Junco and Mastrodicasa research showed that college administrators and students differ in their usage and acceptance of technology.

The Junco and Cole-Avert (2008) study pointed out that not only is there a difference between faculty and students using Facebook, there is also a difference between Facebook use by male and female students. Joiner, Gavin, Duffield, Brosnan, Crook, and Durndell (2005) explained that women prefer to use the Internet and its applications chiefly for communication while men use it for research and playing games. They found that when students use technology and its available tools, they seldom discriminate between real world and online communications. To them, online connections are merely an extension of their natural ability to interact and speak.

Research has shown that almost all college students own a cellphone. Mastrodicasa and Kepic (2005) found that 97.2% of college students own cell phones and prefer text message communication to e-mail. Junco and Cole-Avert (2008) found that students are increasing their text messaging usage and that it will only continue to increase. At the conclusion of the Mastrodicasa and Kepic study, the researchers proposed the following methods and ideas to integrate faculty and student technology usage:

- Be open minded
- Have a technology educational goal
- Talk to students about technology
- Assess staff needs and plan accordingly
- Continue to access technology value and educational outcome

Kleinglass' (2005) research showed that the use of technology in higher education is becoming stronger over time and that the expectations of students are higher. She argued that student affairs professionals have arrived at a critical junction in the way they currently handle their daily affairs. Also, her research indicates that the student affairs professional needs to take a leadership and collaborative position in the future direction of technology usage in their functional areas of the institution. Proficiency in using the most current technologies, and an understanding of these technologies, is critical to reaching out to potential and current college students.

Technology and College Student Engagement

Most first-year college students arrive on campus with their own personal computer, digital music player, cell phone, and other digital devices (Salaway, Caruso, & Nelson, 2008).

Since the early 2000s, web-based applications have become the de facto standard platform for distance courses and learning management systems (Parsad & Lewis, 2008).

In 2009, Chen, Lambert, and Guidry conducted a large-scale study to explore the effects of Web-based learning on student engagement and self-reported learning outcomes in face-to-face and online learning environments. The researchers utilized prior research questions developed by the National Survey of Student Engagement (NSSE). To conduct the research, specific NSSE online learning questions were sent to 45 randomly selected baccalaureate degree-granting institutions. The survey was sent to 77,714 first-year and fourth-year college students with approximately 23,706 students responding of which 17,819 were usable. Females were more responsive to the survey and comprised 65% of the sample.

The study found that students who took online courses are more likely to use the Web or Internet technologies to improve their learning and communication with faculty members and students. The analyses indicated that individual and institutional characteristics do have a small but statistically significant effect on a student's likelihood of taking online courses. Their research also suggested that racial and ethnic minorities and part-time students were more likely to take online courses. The researchers suggested that convenience for the student is the motivating force behind the online course phenomena. The study concluded that there was a positive relationship between web-based learning technology use and student engagement. The student who utilized broadband connections and Internet technologies tended to score higher in the traditional student engagement measures. Those same students were also more likely to use deeper approaches to learning.

Miller and Pope (2003) studied the integration of technology in community college orientation programs. This exploratory study measured the technology expertise and skill levels

new community college students possessed when they arrived on campus with respect to student technology expectations. While the purpose of the study was to identify strategies for the exposure of new students to technology during new student orientation programs, it specifically narrowed its focus on the community college student. Gardner and Hansen (1993) had previously found that most student orientations inform the new students of the expectations of college level work and what survival skills are required in and out of the classroom. To conduct the study, Miller and Pope used an adaptation of a previous instrument created by Miller and Viajar (2001) in a study of four-year college orientation programs. The sample included 225 community college orientation and student affairs professionals randomly selected from the membership of the National Orientation Directors Association (NODA). Means and standard deviations were used in the data analysis. The survey included 18 strategies for incorporation of technology into new student orientation programs. Of these 18 surveyed strategies, seven were clearly identified as potentially effective for technology integration into new student orientation.

The orientation professionals strongly felt that the most effective way to integrate technology into new student orientation programs would be to provide e-mail accounts to new students upon arrival on campus. The professionals also agreed that in order to emphasize the importance of technology, strategies should be adopted such as: emphasis on the importance of technological competence, use of virtual tours of campus on-line prior to the student's arrival at campus, having an on-line treasure hunt at the college's website, providing computer workstations for pre-registration at orientation, providing on-line demonstrations of how to navigate college services, and, offering a special session on technology support at the college.

In other research, Katsinas and Moeck (2002) reviewed four major studies conducted by the National Telecommunicating and Information Administration (NTIA) regarding the digital

divide and rural community colleges. The four NTIA reports were published in 1995, 1998, 1999, and 2000 and titled *Falling through the Net*. The purpose of the reports was to obtain Congressional funding to create Community Technology Centers, fund teacher training, and provide funds for assistive technology for persons with disabilities. During the four studies, it was determined that rural community colleges were often the leading post-secondary institutions to service needy students in providing computer training and support.

A common theme between the studies was the finding that citizens living in rural areas with the lowest income levels are among the least connected to the Internet. Also, rural and central city areas with high populations of Native Americans, African-Americans and Hispanics were less likely to have telephone access, personal computer ownership, and Internet access. The four reports did not indicate significant improvement over the years.

Taken together, the four reports produced a consistent theme of concern for rural areas. The researchers indicate that rural areas of the country are being left behind technologically, and the gaps are widening. They stressed that rural community colleges face an abundance of problems as they attempt to secure and update the available technology and modern services that their urban counterparts enjoy.

Technology and the Nontraditional Student

Miller and Lu (2003) conducted a study designed to describe the efforts of faculty who taught courses online and how they adapt their curriculum to meet the needs of students who fall outside the definition range of the traditional college student. By most definitions, the traditional college student is someone aged 18-24 and enrolled on a full time basis and all other students who do not fall into those classification ranges are considered nontraditional. Kuh (1990) stated that nontraditional college students have replaced the traditional views of a full-time college

student as being the norm. Miller and Lu (2003) noted that nontraditional learners increasingly make up a larger percentage of the total undergraduate student body and through multiple definitions actually comprise the majority of all college students.

The researchers used a 38-item survey instrument to collect data. The instrument was based on fieldwork conducted by the Department of Instructional Technology at San Jose State University. The study included 100 members of the National Association of Student Personnel Administrators (NASPA) and 100 members of an online teaching support group. A total of 88 responses were used for data analysis. Although the response rate was low (44%), it was found to be acceptable for the exploratory nature of the study.

Findings from the study showed that faculty members who teach in e-learning environments see the differences in the way traditional and nontraditional students learn. They were able to determine that most faculty members work to accommodate these different learning styles. Furthermore, if a faculty member had expertise in adult education and adult learning styles, their knowledge could be leveraged to help other faculty members whose traditional pedagogy needed to be adapted for nontraditional learning styles.

Racial Differences in Information Technology Use in College

A study by Flowers and Zhang (2003) used data from the 2002 National Student Aid Study to describe the extent information technology use in college differed by race. They defined information technology as using the Internet for research purposes, using e-mail and chat rooms for school, using word processing and spreadsheet software, and programming in computer languages.

An earlier study done in 2000 by Flowers, Pascarella, and Pierson used data from the National Study of Student Learning and determined that computer and e-mail use did not

significantly impact learning outcomes for college students who attended four-year colleges. That study did show that information technology use applied a positive and significant impact on cognitive development during the first year of college for the two-year student. Kuh and Hu (2001) analyzed responses from the College Student Experiences Questionnaire (CSEQ) from more than 18,000 undergraduates and found that computer use resulted in significant increases in student learning outcomes. For their 2003 study, Flowers and Zhang utilized a student sample that consisted of more than 45,000 undergraduate students attending over 1,000 institutions in the United States.

After reviewing the information collected from previous research and data produced from their findings, Flowers and Yang concluded that, taken as a whole, the results indicated that racial differences do exist in terms of information technology use in college. They pointed out that their research results were only a starting point for future researchers and that they did not know how much influence information technology usage rates by race affected college outcomes. They recommended future researchers look at the impact of information technology use on cognitive development by race and identify why differences exist in technology use by race.

Distance Education and Social Technologies

Burnell (2002) defined distance learning "simply as an instruction and learning practice, utilizing technology and involving students and teachers who are separated by time and space" (p. 292). During the mid-1990s, distance education was thought to hold the future for rural community colleges. Cejda (2007) indicated that as distance education has moved to Internet based technologies, concern and caution have been elevated about the digital divide and its

impact on distance education. A review of the literature indicates that little research has been conducted on distance education and Internet-based education in rural community colleges.

During the 2002-2003 academic year, the National Council of Instructional Administrators (NCIA) sponsored a survey of chief academic officers (CAO) in nine states. The survey was sent to 202 public, two-year institutions. One hundred fourteen usable returns were received with 73 returns coming in from rural community colleges. The study looked to do the following: (1) to evaluate the status of distance education offerings by rural community colleges in selected states, and (2) to identify the most pressing distance education technology issues facing rural community colleges.

A surprise survey finding indicated that 100% of the rural community colleges offered at least one course through distance education. To better understand the surprise finding, a follow-up response was implemented utilizing distance education criteria as prescribed by the U.S. Department of Education. The follow-up found 69 of the 73 (95%) rural community colleges reported that they offer some kind of distance education. The study findings also indicated that rural community colleges in the nine states delivered only a small fraction of their curriculum through distance technologies. Only five institutions offered more than 25% of their curriculum through Internet-based delivery. The secondary purpose of the study was to identify the most pressing technology issues facing distance education at those nine community colleges. The study concluded the two most pressing distance technology issues were access to the Internet and a computer.

A study by Roblyer, McDaniel, Webb, Hermen, and Witty (2010) pursued the technological phenomena of Social Networking Sites (SNS) in the United States and explored issues that were related to the faculty and student acceptance of SNSs. The researchers during

the course of the review wrote about numerous SNS available to college students but major emphasis was placed on one technological entity, Facebook. The study when introducing Facebook described it as:

> the community-building resource called Facebook. A faculty-student survey was conducted at a mid-sized southern university. The study population equaled 62 higher education facilities and 120 college students. The researchers acknowledged that the number of participants was small. The gender percentage for both groups was very close with only a few more females than males (pp. 64-56).

SNSs began in 1997 with the creation of SixDegrees.com. Boyd and Ellison (2008) wrote, "it allowed users to create profiles, list their friends and, beginning in 1998, surf the friend's list" (p. 214). The researchers identified two websites, MySpace and Facebook, as being very popular with students. Their study compared student and faculty uses of Facebook.

The study found that students and faculty differed significantly on how likely they were to have a Facebook account. Ninety-five percent of the students had an account while only 73% of the faculty had one.

When the study compared how often the students and faculty checked their e-mail and Facebook accounts, the students tended to check both e-mail and Facebook with equal frequency. The faculty was significantly more likely to check e-mail than Facebook. These research findings were consistent with other studies that indicated students communicate as much with Facebook as they do with other traditional technologies like e-mail. The data also indicated that faculty and students do not use Facebook for instructional purposes, and it was found to be the least commonly used instructional technology.

When reviewing the data to compare student and faculty perspectives on SNSs for classwork, the groups differed somewhat on the application of Facebook. The students were significantly more likely to agree that it would be convenient to use Facebook for their

academics, but faculty were significantly more likely to agree that "Facebook is not for education" (p. 138). Students were clearly more open to the idea of using Facebook in an academic setting than the faculty were. Ultimately, the study found that the use of Facebook was perceived as social rather than educational. The research concluded that even with the rapid growth and current popularity of Facebook, it is unclear whether social media applications similar to it have a future in higher education.

Mastrodicasa and Kepic (2005) showed that 85% of students at a large research university had accounts on Facebook. While to date, Facebook has been the most popular social networking site for American college students, professors, and instructors have been more receptive to the integration of Twitter as part of the learning process (Grosseck & Holotescu, 2009; Rankin, 2009; Ebner, Leinhardt, Rohs, & Meyer, 2010; Sakroeder, Menocha, & Schneider, 2010).

Junco, Heibergert, and Loken (2010) undertook a study to determine the effects of Twitter on college student engagement and grades. The words, 'Twitter-Tweets' have entered into the lexicon of the English language, and Twitter technology has become a part of the American social media. Social media sites such as Facebook, MySpace, and Twitter have become an interwoven part of the college student's life (Junco & Mastrodicasa, 2007; New Media Consortium, 2007; Cotten, 2008). Junco et al. (2010) stated that some educators have identified Twitter as a potential teaching tool. However, there has been very little integration into most higher education curriculums. Twitter is more accepted as a possible academic learning tool primarily because it is a micro blogging platform (Ebner, Lienhardt, Rohs, & Myer 2010). Twitter has been described as a blog that is restricted to 140 characters per post and that it includes the functionality of social networking (McFedreies, 2007). While Twitter has been

around for some time, the literature shows there to be very little empirical evidence referencing the impact of social media use on student learning and engagement.

The Junco et al study utilized 125 students who were enrolled in a first-year seminar course for pre-health professional majors. Seventy of the students were assigned to the experimental group and fifty-five in the control group. The 125 students were then grouped into seven sections. None of the students had used Twitter before participating in this study. Both groups used Ning (http://www.ning.com), a service that allows users to create their own social networking site.

The age of the participants ranged from 17 to 20 with 98% of them either 18 or 19. The mean age was 18.2 with a standard deviation of 0.445. The racial and ethnic breakdown of the students conformed in general with the overall university demographics. The study ran for fourteen weeks. At the commencement of the study, the students in the experimental group were trained in the creation and utilization of the Twitter class account. Soon after the Twitter training session of the experimental sections, all sections were sent links to the online engagement instrument.

Two of the study authors administered the Twitter class account. The authors utilized prior research information on student engagement (Chickering & Gamson, 1987; Pascarella & Terenzini, 2005; Kuh, 2009), engagement in social media (HERI, 2007; Heiberger & Harper, 2008), and other relevant case studies. Twitter was used for the following educational activities:

- Continuity for class discussions
- Giving students a low-stress way to ask questions
- Book discussion
- Class reminders

- Campus event reminders
- Providing academic and personal support
- Helping students connect with each other and with instructors
- Organizing service learning projects
- Organizing study groups

During the course of the semester, the Twitter class account sent over 300 tweets to its participants. The control group was provided all the same information that was posted to the Twitter group via the comment wall of the Ning social network. In order to evaluate an engagement scale, nineteen items were selected from the NSSE survey. From NSSE, an aggregate engagement score was created using the sum of the nineteen individual items.

Upon conclusion of the fourteen week study, Twitter usage by the experimental group was reviewed. The results of the semester grade point averages of the experimental group were significantly higher than those of the control group. The researchers felt that the results of the study suggested that Twitter could be used to engage students in ways that are important for their academic and psychosocial development. They also contend that Twitter can support Chickering and Gamson's (1987) seven principles for good practice in undergraduate education.

This study concluded that it was the first research of controlled experimental data that used Twitter in an educational related way to increase student engagement and improve grades. The findings suggested that social media could be used as an educational tool to help students reach desired college outcomes.

Study Habits

Many freshmen on the first day of a new class have heard the following formula driven expression: For every one hour that a student is in class, three hours of study outside of class are

necessary for collegiate success. One can quickly see that by this formula, a student enrolled in fifteen credit hours is going to theoretically need 45 hours outside of class for study purposes. While this simple prescription shows the study time demands necessary for a nonworking, full-time student, it tells very little about the working student or the parental student. Common sense dictates that this formula breaks down very quickly when a student has responsibilities outside the class other than study. Lastly, other than it being an extremely anecdotal saying, it is completely unsupported and non-researched.

Bednar and Weinberg (1970) of the Arkansas Rehabilitation Research and Training Center of the University of Arkansas at Fayetteville performed a meta-analysis of 23 studies looking to evaluate the effectiveness of various treatment programs for underachieving college students. The authors only focused on studies that used a grade point average as the dependent variable. Beside the dependent variable restriction, they also only looked at specific research that concentrated on treatment programs that used student academic performance as the independent variable. Bednar and Weinberg (1970) wrote, "Does counseling contribute to improved academic performance? It is time to ask, 'What dimensions of counseling treatment programs are associated with improved academic performance?' In brief, what seems to work?" (p. 1).

The 23 studies were grouped into the following areas: (a) individual counseling, (b) group counseling, (c) remedial instruction counseling, (d) study skills courses, and (e) guidance programs in conjunction with study skills courses. Bednar and Weinberg (1970) were successfully able to determine that more than half of the studies (13 out of 23) analyzed were successful in improving academic outcomes. Six of the studies found a positive relationship toward effectiveness and four studies showed a negative or inconclusive result.

The authors were able to determine certain variables as being more effective than others. Specifically, with the variable of time, they found that treatments lasting ten hours or longer were more effective than treatments of less time. Twelve treatments were found to have ten or more hours of counsel. Of those twelve treatments, nine (75%) were effective in increasing the student's grade point average and the remaining three (25%) supported positive trends.

A second variable that Bednar and Weinberg (1970) analyzed was whether the treatment was of a structured or unstructured nature. A structured program was one that involved a direct contact with a prescriptive nature. An unstructured program was one that was non-prescriptive or affectively oriented. Their findings pointed out that the structured treatment programs were effective in 10 out of 16 studies. They stated, "The data resulting from this grouping of studies suggest that the degree of structure involved in the treatment program is a critical variable for discriminating which treatment programs were effective or ineffective" (p. 3). Their compilation of data significantly suggested that academic performance was far more often to improve when a structured treatment was in place.

The researchers ended their meta-analysis by focusing on the programs that were recognized to be successful and whether or not there was a focus on its long-term efficacy. Nine of the successful treatments included a follow-up of the student's academic performance. Three of the treatment follow-ups supported significant findings and concluded, "Thus, not only are treatments that are lengthy and structured effective in improving academic performance, but such programs are probably the most effective for producing long-term effects" (p. 5).

Researchers McFadden and Dart (1992), examined the level of time management skills and study skills found in undergraduate business students. The authors assumed that as a goal, each student was trying to maximize their overall grade point average for the semester. They

hypothesized that to achieve a goal of a successful grade point average, the student would allocate enough available study time to attain the desired outcome. The student will put in the desired amount of study time based upon what they believed was necessary to achieve the desired grade outcome. For example, the student with the "C" average in the class will only commit the desired amount of study time necessary to maintain or reach the grade desired. In theory, the "C" average student will not put forth the effort of studying for a grade outcome of an "A" when they know it is not possible to achieve.

In their research, the data was gathered from students in four undergraduate business classes, two at the sophomore level, and one each at the junior and senior levels. The survey questionnaires were administered during the 10th week of a 13-week semester. There were 146 surveys distributed, and 143 were usable. The researchers asked a series of questions to determine how many hours were devoted to studying for a class and if a student was willing to put in more or less time studying. The researchers sought to determine if the survey respondents believed they would gain grade-wise by putting in more or less effort studying. The results of the research showed that on average, survey respondents studied at optimal levels, and that by instituting more total study time, their efforts in the class was rewarded. This research was limited to a specific group of students, but it showed that if a student wanted to achieve a particular grade, there was a specific amount of study time necessary for attainment.

Researchers Nonis and Hudson (2006) investigated the influence of time spent studying and working by college students on academic performance. They administered a survey to undergraduate business school students. Two hundred sixty four usable surveys were analyzed against their four hypotheses. Specifically related to studying, they hypothesized that (a) there is a relationship between time spent studying outside of class and academic performance, (b) time

spent studying outside of class will significantly interact with ability in that the influence that ability has on academic performance will be higher for students who spend more time studying outside of class than for students who spend less time studying, and (c) more time spent studying outside of class will significantly interact with motivation in that the influence that motivation has on academic performance will be higher for students who spend more time studying outside of class compared with students who spend less time studying outside of class (2006). The researchers used Pearson Product-Moment Correlations and moderated multiple regression analysis to analyze the data set. They found that as a whole, there was no significant relationship between a student's time studying outside of class with their academic performance or GPA. The researchers did confirm that a student's aptitude and ability was a better predictor of a successful GPA rather than the number of hours put into studying. In the simplest terms, the research showed that the student's motivation to study and the aggregate amount of time spent studying had no direct impact on academic performance. They also found that a key determiner of a GPA was a student's aptitude rather than the time spent studying.

According to economists Babcock and Marks (2010), the hours per week that students were studying has dropped considerably over the last few decades. They compared multiple educational data sets and found that students were putting in less time each year studying. These findings fall in line with the 2003 survey of the Higher Education Research Institute (HERI). The HERI survey found that only 34% of entering freshmen were spending more than six hours per week outside of class doing academic related work such as homework and study during their senior year in high school.

The annual National Survey of Student Engagement (NSSE, 2011) surveyed over 416,000 students from 673 U.S. baccalaureate degree-granting colleges and universities in the

spring of 2011. Specifically relating to studying, the survey found that full-time students put in about fifteen hours a week of study on average. The findings indicated that total student study time varied by discipline and degree. Degrees that are perceived to be more demanding, such as engineering, were found to have more study time allocated for it. Interestingly, 22% of all engineering students who spent 20 hours or more studying reported that they often or very often came to class without or with incomplete assignments.

Hassanbeigi, Askan, Nakhjavani, Shirkhoda, Barzegar, Mozayyan, and Fallahzadeh (2011) found that in a sample of 179 junior and senior medical and dental students, the study skill scores in their researched students with a "C" or better GPA were significantly higher than students with a lower than "C" GPA. Seven measured study skills domains were analyzed: (1) time management and procrastination, (2) concentration and memory, (3) study aids and note taking, (4) test strategies and test anxiety, (5) organizing and processing information, (6) motivation and attitude, and (7) reading and selecting the main idea. The results produced a statistically significant difference between both groups of students in all seven domains.

Chapter Summary

Over the past several years, traditional education at community colleges has vastly changed, and this is primarily attributed to rapid changes in technology and transformations in educational delivery (Reeves & Osho, 2010). Duderstadt, Adkins, and Van Houweling (2002) observed that technology is the stimulus that is changing the way communications and learning occur with college students inside and outside the classroom. Technology and its tools are ever increasing, and the drive for, and scale of, change is becoming greater and more noticeable each year. For example, Parker, Lenhart, and Moore (2011) wrote that "the vast majority of two-year colleges offer online courses (91%), and their leaders are among the most likely to believe that

online learning is comparable to learning in a classroom. Two-thirds of the presidents of two-year colleges say an online course provides an equal educational value when compared with a course taken in person" (p. 5). The positive relationship between college students' successful study habits and technology cannot be dismissed, and the future for these attributes bode well. Digital technologies have been changing the way institutions of higher education do business, but the use and influence of these technologies are only a part of the picture.

Technology and its future is both advanced and restricted by the very ones it is designed to help. Future technology and its applications are bright. It is the light of tomorrow, but unless the professionals at all educational levels step forward and articulate its benefits, there exists the possibility of restrictions and limited implementation. These restrictions may manifest themselves in the form of tight educational budgets and the tendency to make do with the assets already in place. These potential limitations can be overcome, but much of the heavy lifting must be borne by our senior educational administrators, faculty, and staff.

The literature on study habits produced a mixture of ideas. It showed that students studied less and worked more. It revealed that students would not necessarily produce successful grades by simply putting in an abundance of study hours. It also showed that not all study techniques worked or had a lasting and long-term effect. As well, the literature showed that students must be taught how to study, shown specific techniques, and followed up with to reinforce taught skills.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

The purpose for conducting this study was to explore whether or not there were trait differences in gender with technology use and study habits of rural community college students. The purpose of this chapter is to describe the sample selected, the instrumentation and procedure used to collect data, and how the data analysis was conducted.

Location of the Study

A single, rural two-year community college located in the southwestern United States served as the target for this study. The community college was not identified in the study. This community college is set in a rural area that is located approximately 90 miles from the nearest city with a population of 40,000 or more. A review of the college's demographics revealed that the student body consists of approximately 1,108 students and had a gender count of 33.1% male and 66.9% female. The average age of the student body was 30.8 with a median age of 21 (Community College document, 2012).

Survey Subjects

A stratified selection process was used to choose the students who would complete the survey. A purposeful sample that was statistically representative of the population was used. To survey enough students to satisfy an appropriate sample size, the following classes were chosen: Freshman Composition I and II, College Algebra, United States History I, and II, Introduction to Computers, Oral Communications, World Civilization I and II, and Biological Science. At this particular community college, all students who seek an associate's degree can enroll in those classes and transfer them to any of the Arkansas public four-year universities. Surveying the

students in this cross-section of classes provided a healthy and representative sample of the entire student population and thereby reduced sampling error. The community college had 560 degree-seeking students (387 females and 173 males). This purposeful sample yielded a potential of 204 students.

Survey Instrument

The study used a quantitative design and was randomly administered. The researcher used descriptive statistics and independent *t*-tests to determine whether there were significant differences in gender between the mean scores of study habits and technology use. An alpha level of 0.05 was used to accept or reject that there was no difference in study habits and technology use by gender. The survey instrument was divided in three parts. In part one of the survey, twelve demographics questions were asked. The second part of the survey asked thirteen questions on student study habits via a five-point Likert-type scale. The scale ranged from one to five with one being "Never," two being "Seldom," three being "Sometimes," four being "Often," and five being "Always." The third, and last, section of the survey asked twenty questions on student technology usage patterns, and the responses were constructed on the same five-point Likert-type scale used in section two. For the study, the instrument was adapted from previous research done by Miller, Pope, and Steinmann (2006). The lead author of the instrument was contacted to request permission to use the instrument

Procedure

Before administration of the study began, the researcher piloted the survey. Pilot testing provided the researcher with the necessary feedback to improve the survey (Creswell, 2005). A pilot test was administered to five students at the institution where the researcher was employed. The five students were potential survey respondents in the targeted population, and the feedback

from these students was used to validate the instrument and its directions for completion. No negative feedback was provided to the researcher from the pilot tested students.

The survey was administered in a face-to-face setting. The survey participants were asked to complete the answers to the instrument questions via pen or pencil. The researcher provided survey instructions to all faculty members that administered the survey. Information about, and instructions for, the survey were read to the classes before every administration. There was a cover sheet attached to each survey, and the following heading resided on the front page:

> The current study was designed to find out more about the technology use and study habits of community college students. Your participation in this survey is completely voluntary and no private information about you will be gathered. Should you have any questions, please contact Phillip Wilson (479) 234-1069 or Dr. Michael Miller (479) 575-3582, University of Arkansas at Fayetteville. Thank you for taking time to participate in this survey.

The completed surveys were hand collected by the researcher or the administering faculty member and placed in a sealed manila envelope.

Data Analysis

This study was approved by the administration of the rural community college surveyed. Basic descriptive statistical analysis and independent *t*-tests were used to evaluate the differences in gender. Specifically, the study sought to answer the following research questions:

1. What were the study habits of rural community college students?
2. How did rural community college students use technology?
3. Were there significant differences by gender in the study habits of rural community college students?
4. Were there significant differences by gender in technology use of students in a rural community college?

Descriptive statistics were used to analyze the demographic data and related survey questions in research questions one and two. Frequency distributions were created from the first twelve demographic questions. Frequency distributions were found in the following: gender, age, first generation student, overall grade point average, number of hours completed at the institution, marital status, financial aid status, remedial status, ownership of a computer, ownership of a cell phone, Internet access, and the number of hours per week spent studying. Percentage distributions were found for Questions 13-47 as they used a 5-point response Likert scale. For research questions three and four, independent t-tests were conducted on survey questions 13-47.

Chapter Summary

The purpose for conducting the study was to explore the trait differences by gender of the study habits and technology use patterns of rural community college students. Purposeful sampling was used to acquire the necessary amount of survey respondents to minimize sampling error. An adaptation of the Miller, Pope, and Steinmann (2006) survey was used. Data was examined using descriptive statistics, and independent *t*-tests were used to analyze the possible differences in means.

CHAPTER IV

RESULTS

Introduction

The competitive environment in higher education has encouraged institutions to be as technoligically advanced as possible. The millennial student is a digital native who expects that advanced technology will be present in and out of the classroom.

Also, in today's higher education marketplace, community colleges present educational opportunities to students that are quite possibly the most varied and at-risk. Community colleges play a crucial role in bridging the social and academic barriers to potential postsecondary success. Student success has never been more important in this day of increasing tuition and demands of institutional accountability. Specifically, the rural community college student is faced with disproportionate challenges in providing the necessary resources for comprehensive academic success. Consequently, a student's academic success has never been more in the forefront of the issues facing rural community colleges. The rural community college student of today feels unique external pressures that prior generations did not experience. The modern student is faced with more requirements, commitments, and decisions outside of the classroom, and because of those challenges, student success is more difficult to attain than ever before.

This chapter provides answers to the four research questions about trait differences by gender with the study habits and technology use patterns of rural community college students. The data analysis includes descriptive statistics, analysis of the difference in means, and an overview of how each question is answered using the statistical results.

The first section of the chapter examines the demographic profile of the students responding to the survey. The second section covers the student's self-reported responses to

their study habits, third section looked at the student's self-reported responses to their technology use patterns, and the fourth section analyzed significant differences by gender in the study habits of these students. The last section provided an analysis of whether or not there were significant differences by gender in technology use of students in a rural community college.

Summary of the Study

The purpose for conducting the study was to explore whether or not there were statistically significant trait differences by gender with study habits and technology use of rural community college students. The study also provided demographic information on gender, age, first generation student, grade point average, class standing, marital status, financial aid status, remedial status, ownership of a computer or cell phone, presence of an Internet connection, and the number of hours per week that the student studies.

The target for the study was a single, rural, two-year community college located in the southwestern United States. This community college was set in an isolated area that was located approximately 90 miles from the nearest city with a population of 40,000 or more.

A stratified selection process was used to choose the students who would participate in the survey. A purposeful sample that was statistically representative of the population was used. To survey enough students to satisfy an appropriate sample size, the following classes were chosen: Freshman Composition I and II, College Algebra, United States History I, and II, Introduction to Computers, Oral Communications, World Civilization I and II, and Biological Science. At this particular community college, all students who sought an associate's degree can enroll in those classes and transfer class credits to any of the Arkansas public four-year universities. Surveying the students in this cross-section of classes provided a representative sample of the entire student population and thereby reduced sampling error. The community

college currently had 560 degree-seeking students (387 females and 173 males). This purposeful sample yielded 204 students.

The study was significant because it contributed to an area of research on rural community college students that was lacking professional information and depth. The research provided an opportunity to provide additional knowledge in specific areas of rural community college student life that was not readily available in academic and scholarly literature. Results from the study will aid the network of rural community colleges that are spread out across the United States.

Data Collection

The study's purposeful sample included a single rural community college student body enrolled during the spring semester of 2012. The researcher worked with the vice president of academic and student affairs to obtain permission to survey the students. A stratified random sample was used, and a total of 153 usable surveys were available for analysis (75% return rate). The administration of the survey occurred over a two week period of time during the last third of the semester. The survey included 47 questions, with questions 1-12 being demographic in nature, 13-24 being about study habits, and 25-47 being specific to technology use. Self-reported frequency use charts were created to present each question's mean, standard deviation, and the percentage of responses that reported a "never" and "always." Independent *t*-tests were conducted to examine the differences in gender within student study habits (questions 13-24) and technology use patterns (questions 25-47).

Demographic Findings

The demographic findings are shown in Table 1. Survey results of gender makeup, age, parental higher educational attendance, marital status, and financial aid status were comparable

to internal institutional documents (Institutional Research Department, 2012). Enrollment in developmental class findings showed a lower remediation rate than institutional documented rates. Ownership of a cell phone (96.7%) was high, as was ownership of a computer or laptop and Internet connections. There were 94.1% of the students that reported owning a computer or laptop. The data also showed that 81% of students in this rural community college had an Internet connection of greater capacity than a dial-up connection.

Table 1

Demographic Characteristics		
Characteristic	N	%
1. Gender		
Male	58	37.9
Female	95	62.1
2. Age		
18-19	60	39.2
20-21	26	17.0
22-25	15	9.8
26-40	32	20.9
41+	20	13.1
3. Did either of your parents ever attend a college or university		
Yes	85	55.9
No	67	44.1
4. Overall GPA		
0.00-0.99	0	0
1.0-1.99	6	3.9
2.0-2.99	48	31.4
3.0-4.0	99	64.7

(table continues)

5. Number of semester hours completed at the college		
0-14	44	28.9
15-29	48	31.6
30-44	26	17.1
45-60	19	12.5
60+	15	9.9
6. Marital Status		
Single	96	62.7
Married	40	26.1
Separated / Divorced	16	10.5
Widowed	1	0.7
7. Are you, or have you been enrolled in a developmental class?		
Yes	67	43.8
No	86	56.2
8. Are you receiving financial aid?		
Yes	119	77.8
No	34	22.2
9. Do you own a computer or laptop?		
Yes	144	94.1
No	9	5.9
10. Do you have an Internet connection for your computer or laptop?		
Yes	124	81.0
No	23	15.0
Dial-up	6	3.9
11. Do you own a cell phone?		
Yes	148	96.7
No	4	2.6
12. How many hours a week do you study?		
0-10	93	60.8
11-15	37	24.2
15-20	17	11.1
Over 20	6	3.9

Research Question Findings

Research question 1: What were the study habits of rural community college students?

Table 2 shows the mean, standard deviation, percent "never," and percent "always" findings of the students surveyed with respect to their study habits. Of those who responded, 54.9% of them said that they "often" or "always" studied at home, and 77.1% of them reported to studying alone "often" or "always." Nearly half, 46% indicated that they "never" or "seldom" study at their community college. Data showed that only 14.4% of them "often" or "always" studied in a small group. Of the students reporting, 64.1% stated that they "never" missed classes because assigned work was not complete. Students responded that 85% of them studied less than 15 hours a week, with a preponderance (60.8%) of them studying 10 hours or less. The data generated from the research showed that there are not dramatic differences between genders. Also, the findings support the idea that the study habits of community college students tended to be a solo activity held at locations other than at the community college.

Table 2

Self-reported Frequency Usage of Study Habits on a 1 to 5 Scale

Study habits	M	SD	% "Never"	% "Always"
13. Study at home	3.65	1.07	2.6	26.1
14. Study alone	4.03	1.07	3.9	40.5
15. Visit the college's library	2.80	1.25	17.0	11.1
16. Worked on a class project out of the class	3.43	1.17	7.8	19.6
17. Study at the college	2.75	1.24	18.4	8.6
18. Study in a small group	2.08	1.12	36.6	3.9
19. Meet your instructor out of class	2.23	1.06	28.3	3.9
20. Make use of the available peer tutoring services	2.30	1.29	34.6	9.2
21. Come to class without completing readings or assignments	2.26	0.93	19.6	1.3
22. Missed class because assigned work was not complete	1.53	0.86	64.1	2.0
23. Put in the very minimum effort to get the grade desired	2.03	1.04	38.2	2.6
24. Put in the very maximum effort to get the grade desired	3.86	0.99	2.6	28.1

Research question 2: How did rural community college students use technology?

Table 3 shows the mean, standard deviation, percent "never," and percent "always" findings of the students' use of technology. There were 79.4% and 73.2% of students who "often" or "always" used a computer to type school work and do research from home on their computers, respectively. There were 88.3% who responded that they "always" used the Internet. More than a majority of students (64.1% and 62.3%) always used their cell phones for personal reasons and to text message. Also, 81.6% of them "never" or "seldom" sent an instructor a text message. Notably, e-mail used for academic reasons, personal reasons, and sending an e-mail to an instructor produced various results. Facebook use was used as a personal tool (48.7% "always" use it) and much less for academic purposes with students responding that they "never"

use it for academic reason (50.0%) and that they "never" sent an instructor a Facebook message (76.5%). Twitter use among students was almost nonexistent with 93.5% saying that they "never" use it for academic reason, 95.4% "never" send an instructor a Twitter message, and 81.0% "never" use the social network for personal reasons. Similar to research question one, technology use among rural community college students appeared to be a private activity away from the institution. As well, the students tend to prefer the newest forms of technology available to them and are generally connected to a broadband Internet connection.

Table 3

Self-reported Frequency Usage of Technology Use on a 1 to 5 scale

Technology use		M	SD	% "Never"	% "Always"
25.	Type school work on a computer	4.20	0.93	2.0%	46.4%
26.	Do research from home on your computer	3.87	1.24	9.2	37.9
27.	Use study resources on a computer	3.71	1.15	4.6	30.3
28.	Use a college computer lab	2.93	1.39	18.3	19.0
29.	Access the library from home	2.01	1.29	52.3	7.2
30.	Use the Internet	4.52	0.81	0.7	68.0
31.	Use a computer for academic / school related purposes	4.10	0.92	1.3	41.2
32.	Use a computer for personal reasons	4.09	1.11	3.3	48.4
33.	Use your cell phone for academic / school related reasons	2.78	1.27	20.3	11.1
34.	Use your cell phone for personal reasons	4.33	1.08	3.3	64.1
35.	Use your cell phone to text message	4.22	1.24	7.3	62.3
36.	Send an instructor a text message	1.65	0.99	61.2	2.6
37.	Use e-mail for academic / school related reasons	3.52	1.15	6.5	22.9
38.	Use e-mail for personal reasons	3.44	1.37	11.8	29.6
39.	Send an instructor an e-mail	3.22	1.21	11.8	15.1
40.	Use Facebook for academic reasons	1.89	1.12	50.0	3.9
41.	Use Facebook for personal reasons	3.70	1.55	17.1	48.7
42.	Send an instructor a Facebook message	1.42	0.92	76.5	3.3
43.	Use Twitter for academic reasons	1.11	0.49	93.5	0.7
44.	Use Twitter for personal reasons	1.60	1.34	81.0	11.1
45.	Send an instructor a Twitter message (Tweet)	1.07	0.40	95.4	0.7
46.	Shop online	2.92	1.36	22.4	15.1
47.	Pay your bills or bank online	2.62	1.53	39.1	15.9

Research question 3: Were there significant differences by gender in the study habits of rural community college students?

Tables 4 and 5 contain selected results of the independent *t*-tests conducted on the differences between gender and the study habits of rural community college students. Survey questions 13-24 had independent *t*-tests conducted, with gender as the independent variable. Table 4 shows the three most significant findings in those survey questions, and Table 5 listed the three findings with the least significance.

The results showed three questions where a significantly difference was present: questions 13, 19, and 24. In Table 4, the independent *t*-test, at the 0.05 level, showed that females (M=3.89, SD=0.91) were significantly more often to study at home (question 13) than males (M=3.24, SD=1.19) conditions; $t(151)=3.60$, $p = 0.001$. In question 19, males (M=2.51, SD=1.18) were shown to be statistically different from females (M=2.06, SD=0.95) with respect to meeting their instructor out of class, conditions; $t(150)=2.41$, $p = 0.018$. Males are more likely to meet an instructor outside of class. Lastly, the results significantly found in question 24 that females and males were different in putting in the very maximum effort to get the grade. Females (M=4.06, SD=0.84) were more likely to work harder for the grade than males (M=3.53, SD=1.14) conditions; $t(151)=3.059$, $p = 0.003$.

Table 4

Significantly Different Independent *t*-tests in Study Habits by Gender (3 lowest *p* values)					
		n	M	SD	*t*-test
13. Study at home	Male	58	3.24	1.19	*t*(151)=3.60 *p*=0.001
	Female	95	3.89	0.91	
19. Meet your instructor out of class	Male	57	2.51	1.18	*t*(150)=2.41 *p*=0.018
	Female	95	2.06	0.95	
24. Put in the very maximum effort to get the grade desired	Male	58	3.53	1.14	*t*(151)=3.059 *p*=0.003
	Female	95	4.06	0.84	

Notes. *$p<.05$. The *p value less than .05 indicate that the results are significant.

Table 5 lists three study habits survey questions that did not have statistical significance with respect to gender. The findings were chosen because they had the largest *p* value. In question 17, there was no significant difference in the scores for males (M=2.82, SD=1.23) and females (M=2.71, SD=1.26) conditions; $t(150)=0.58$, $p = 0.566$ with respect to studying at the college. Also, there was not a significant difference in the scores for males (M=2.14, SD=1.19) and females (M=2.05, SD=1.09) conditions; $t(151)=0.45$, $p = 0.650$ when analyzing how they study in a small group setting (question 18). Lastly, in question 20 which asked about the use of campus peer tutoring services, there was no significant difference in the scores for males (M=2.28, SD=1.34) and females (M=2.32, SD=1.27) conditions; $t(151)=0.19$, $p = 0.853$.

Table 5

Not Significantly Different Independent *t*-tests in Study Habits by Gender (3 highest *p* values)					
		n	M	SD	*t*-test
17. Study at the college	Male	57	2.82	1.23	$t(150)=0.58$ $p=0.566$
	Female	95	2.71	1.26	
18. Study in a small group	Male	58	2.14	1.19	$t(151)=0.45$ $p=0.650$
	Female	95	2.05	1.09	
20. Make use of the available peer tutoring services	Male	58	2.28	1.34	$t(151)=0.19$ $p=0.853$
	Female	95	2.32	1.27	

Notes. $*p<.05$. The $*p$ value greater than .05 indicate that the results are not significant.

Research question 4: Were there significant differences by gender in technology use of students in a rural community college?

Tables 6 and 7 contain selected results of the independent *t*-tests conducted on the differences between genders within the technology use patterns of rural community college students. Survey questions 25-47 had independent *t*-tests conducted. Gender was the independent variable. Table 6 shows the five significant findings within those survey questions and Table 7 listed the five findings with the least significance according to *p* value.

Statistical significant differences were identified in questions 31, 33, 34, 35, 37, 38, 39, 40, and 41. In all questions that were found to have significant differences, females had the higher mean value. Table 6 was generated from the results of the technology use area of the survey that produced the five most significantly different independent *t*-tests by gender based upon the lowest *p* values. The five lowest *p* values came from questions 34, 35, 37, 39, and 41. In question 34, females (M=4.52, SD=0.87) were found to use their cell phone for personal

reasons, males (M=4.03, SD=1.30) conditions; $t(151)=2.501$, $p = 0.014$. There was a significant difference in question 35 in the scores for males (M=3.88, SD=1.45) and females (M=4.43, SD=1.05) conditions; $t(149)=2.51$, $p = 0.014$ with using their cell phone to text message. Question 37 showed that women were more likely to use e-mail for academic/school related reasons, males (M=3.14, SD=1.21) and females (M=3.76, SD=1.05) conditions; $t(151)=3.349$, $p = 0.001$. There was also a significant difference in the scores for males (M=2.90, SD=1.21) and females (M=3.43, SD=1.18) conditions; $t(150)=2.663$, $p = 0.009$ when sending an instructor an e-mail, question 39. Lastly, question 41 showed a significant difference in the scores for males (M=3.31, SD=1.68) and females (M=3.95, SD=1.42) conditions; $t(150)=2.408$, $p = 0.018$ with using Facebook for personal reasons.

Table 6

Significantly Different Independent *t*-tests in Technology Use by Gender (5 lowest *p* values)					
		n	M	SD	*t*-test
34. Use your cell phone for personal reasons	Male	58	4.03	1.30	$t(151)=2.501$ $p=0.014$
	Female	95	4.52	0.87	
35. Use your cell phone to text message	Male	58	3.88	1.45	$t(149)=2.51$ $p=0.014$
	Female	93	4.43	1.05	
37. Use e-mail for academic / school related reasons	Male	58	3.14	1.21	$t(151)=3.349$ $p=0.001$
	Female	95	3.76	1.05	
39. Send an instructor an e-mail	Male	58	2.90	1.21	$t(150)=2.663$ $p=0.009$
	Female	94	3.43	1.18	
41. Use Facebook for personal reasons	Male	58	3.31	1.68	$t(150)=2.408$ $p=0.018$
	Female	94	3.95	1.42	

Notes. $*p<.05$. The $*p$ value less than .05 indicate that the results are significant.

Table 7 highlights five technology use survey questions that did not have statistical significance with respect to gender. These five findings were chosen because they had the largest *p* values. The questions with the highest p value were 29, 32, 43, 45, and 47. In question 29, there was no significant difference in the scores for males (M=1.95, SD=1.30) and females (M=2.04, SD=1.28) conditions; $t(151)=0.437$, $p = 0.663$ with respect to accessing the library from home. Also, there was not a significant difference in the scores for males (M=4.03, SD=1.18) and females (M=4.13, SD=1.06) conditions; $t(151)=0.496$, $p = 0.621$ with using a computer for personal reasons (question 32). There was not a significant difference in scores for males (M=1.12, SD=0.42) and females (M=1.11, SD=0.54) conditions; $t(151)=0.187$, $p = 0.852$

with the use of Twitter for academic reasons (question 43). When looking at how students send an instructor a Twitter message (question 45), there was no significant difference in the scores for males (M=1.09, SD=0.34) and females (M=1.06, SD=0.43) conditions; $t(151)=0.346$, $p = 0.730$. Lastly, in question 47 there was no significant difference in the scores for males (M=2.67, SD=1.52) and females (M=2.59, SD=1.55) conditions; $t(149)=0.316$, $p = 0.752$ when looking at the students usage of paying bills or banking online.

Table 7

Not Significantly Different Independent *t*-tests in Technology Use by Gender (5 highest *p* values)

		n	M	SD	*t*-test
29. Access the library from home	Male	58	1.95	1.30	$t(151)=0.437$ $p=0.663$
	Female	95	2.04	1.28	
32. Use a computer for personal reasons	Male	58	4.03	1.18	$t(151)=0.496$ $p=0.621$
	Female	95	4.13	1.06	
43. Use Twitter for academic reasons	Male	58	1.12	0.42	$t(151)=0.187$ $p=0.852$
	Female	95	1.11	0.54	
45. Send an instructor a Twitter message	Male	58	1.09	0.34	$t(151)=0.346$ $p=0.730$
	Female	95	1.06	0.43	
47. Pay your bills or bank online	Male	57	2.67	1.52	$t(149)=0.316$ $p=0.752$
	Female	94	2.59	1.55	

Notes. $*p<.05$. The $*p$ value greater than .05 indicate that the results are not significant.

Chapter Summary

This study proposed research questions that examined whether there were trait differences by gender with respect to study habits and technology usage. Demographic data analysis was run on questions 1-12 to answer research questions 1 and 2. For significance purposes, independent *t*-tests were run on questions 13-47 to answer research questions 3 and 4.

Of the survey questions pertaining to study habits, seven questions were found to be statistically significant with respect to gender: study at home (Q13), study alone (Q14), meet your instructor out of class (Q19), come to class without completing readings or assignments (Q21), missed classes because work was not complete (Q22), put in very minimum effort to get the grade desired (Q22), and put in the very maximum effort to get the grade desired (Q24). In questions 13, 14 and 24, females produced a higher mean value. Males were found to have the higher mean value in question 19, 21, 22, and 23.

Of the survey questions pertaining to technology use, nine questions were found to be statistically significant with respect to gender: use a computer for academic/school related reasons (Q31), use your cell phone for academic/school related reasons (Q33), use your cell phone for personal reasons (Q34), use your cell phone to text message (Q35), use e-mail for academic/school related reasons (Q37), use e-mail for personal reasons (Q38), send an instructor an e-mail (Q39), use Facebook for academic reasons (Q40), and use Facebook for personal reasons (Q41). In all technology use questions that were found to be significantly different, females produced the higher mean value.

In conclusion, the independent *t*-tests revealed that 16 of the 35 questions researched identified a statistical difference. These findings indicate that females are more engaged students, and they are more academically focused and technologically engaged than males.

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS, AND DISCUSSION

Introduction

This chapter provides a summary of the purpose and significance of the study and reports the study's results and conclusions. In addition, conclusions, implications of the findings, and recommendations for future practice and research have been offered.

The purpose for conducting the study was to explore the trait differences by gender of the study habits and technology use patterns of rural community college students. Significant research and data presently exists at the university level, but little research had been conducted specifically targeting these topics in a rural community college setting.

The significance of the study was that the results provide rural community college instructors, administrators, educators, and other researchers with important data regarding the use of modern technology. Findings also improve the general knowledge as it relates to student study habits at these remote locations. Rural community colleges, defined by their geographic location, comprise approximately one-third of all community colleges operating in the United States (Miller & Tuttle, 1998).

The study examined the differences in gender of the study habits and technology use of rural committee college students. A demographic analysis of the rural community college students surveyed was developed and a statistical analysis was conducted to determine if there were significant differences by gender in their study habits and technology use. The study's purposeful sample included a single rural community college student body enrolled during the spring semester of 2012.

The demographic data from the research allowed a glimpse into the study habits of rural community college students and how these students used technology. Independent *t*-tests were used to compare the study habits by gender. Similarly, independent *t*-tests were used to compare technology use by gender.

Conclusions

According to the results of the study's demographic findings, student ownership of a cell phone (96.7%) mirrored the findings of the Pew Research Center (Smith, Rainie, & Zichuhr, 2011). Pew's survey found that 94% of community college students owned a cell phone. Ownership of a computer or laptop and Internet connections appeared high. The study indicated that 94.1% of the students reported ownership of a computer or laptop and 81% of them declared to have access to a broadband connection. Pew's research found that 67% and 70% community college students owned a desktop or laptop respectively (2011). In comparison to the Pew findings, this research showed that the surveyed institution was significantly higher in ownership of a personal computer.

The Pew Research Center reported nationally in 2005 that only 24% of rural Americans had access to high-speed Internet connections at home (Horrigan & Murray, 2006). In 2010, 66% of adults had a connection at home (Smith, 2010). Findings in this study indicated that 81% of students in this rural community college had an Internet connection of greater capacity than a dial-up connection. And, 60.8% of the students surveyed were found to study less than ten hours or less per week. This finding aligned with similar data produced by NSSE in 2011.

Research question number one in the study asked: What were the study habits of rural community college students?

Data showed that most students preferred to study at home rather than at the college library, and that students seldom studied in a group. The students also did not indicate an interest in meeting with an instructor outside of the classroom. The findings showed that the students frequently reported investing a maximum effort to achieve the grade they desired. Conversely, 60.8% of the students reported studying less ten hours or less a week.

Research question number two in the study asked: How did rural community college students use technology?

Findings indicated that a majority of students always used their cell phones for personal reasons and texting messages. Data also indicated that the rural student put little effort into communicating with an instructor through a text message, Facebook message, or e-mail message. Notably, the survey data found that Twitter use by the rural student was practically nonexistent, whether academic or personal in nature.

Research question number three asked: Were there any significant differences by gender in the study habits of rural community college students?

The independent *t*-tests results showed that there were seven areas of significant difference by gender. Females were found to be significantly more inclined to study at home and invest in a maximum effort to achieve the grade desired more than their male counterparts. The males by contrast did not work as hard as females for grade achievement, but they were significantly more likely to meet their instructor outside of class.

Research question number four asked: Were there were any significant differences by gender in the technology use of rural community college students?

Nine findings in the technology use area of the survey were found to have significant differences. In all nine of those responses, females were found to have a higher mean response.

Females were significantly more likely to use their cell phone for personal reasons and to text message. They were also more likely to e-mail an instructor and to use e-mail for academic and school related reasons. Lastly, females were significantly different from males in the use of Facebook for personal reasons.

With respect to gender means produced in each question, the study habits section produced a balanced finding with females producing a higher mean in six of the questions and the males similarly producing a higher mean in six of the questions. When looking at the technology use questions, females overwhelmingly produced a higher mean on the questions. Of the 23 technology use questions, females had a higher mean on 19 of them.

Recommendations for Future Practice

Based on the findings of the study, the rural community college should be concerned that their female students, on average, are better students than their male counterparts. A joint academic effort by the college administration and faculty should be undertaken to develop a response to this. Focus groups could be formed to better understand the males and their plight. With the student population being 70% female, the institution needs to reframe the discussion as it relates to student success; a disproportionate gender balance is clearly unhealthy for the rural college and its service area.

Faculty members need to be informed of the data indicating that 85% of their students study less than 15 hours a week, with a preponderance of them (60.8%) studying 10 hours or less. Recent published nationally normed NSSE data support the findings of this institution (2011). According to NSSE, 67% of first year students study between 0 and 15 hours a week. When the same question was asked in 2000, the NSSE finding was 57%. The trend is disturbing, and the similarity of the overall percentages found at the surveyed rural institution should be

tracked closely and discussed among faculty to determine if rigor is slipping or if expectations are lower today than they were in the past.

The survey findings showed that most students did not study in small groups and preferred to study in places other than the college library. Additionally, students seldom accessed the library from home, suggesting that it is apparent that the institution needs to reevaluate its campus library usage, access, and its inclusion into the faculty's curriculum.

The surveyed students were found to be technologically connected with 94.1% of them owning a laptop or computer and 96.7% owning a cell phone. The surveyed institution should look to maximize available technologies across their academic and student affairs areas. Remarkably, 81% of the students answered that they have an Internet connection greater than a dial-up connection. However, the institution should recognize technology as a companion to success and not as a means to an end.

Social media and the use of text messaging should become priorities for the surveyed institution. Student responses indicated that the utilization of e-mail for personal and academic purposes was somewhat sporadic and that it is no longer the most popular way to communicate. The faculty and staff should exercise caution in assuming that student e-mail is the most popular and appropriate way to communicate.

Recommendations for Future Study

This research was intended to fill some of the obvious gaps that have existed in the literature concerning rural community colleges. The overall lack of studies in the rural community college was apparent in the literature review. With enrollment in the community colleges at an all-time high, continued research in this area is needed.

Within this research, it was apparent that female students, on average, are more engaged in their educational endeavors than males. While this study was limited to only one rural community college, it did demonstrate that there were significant differences between the genders. Further studies are needed to understand why females are more engaged in the educational process than males. Research could help to parse out what the key reasons are to why males have become less involved. The national trends show that females are attending community colleges at a greater rate than males. At the surveyed rural community college, institutional demographic data shows that 70% of their student body was female. Both the national data and the local data show disturbing trends.

One of the delimitations of the study was that the data produced from this research was restricted to one rural community college. Continued implementation of this survey at this institution and in other sample rural community colleges would support and clarify the overall picture of the rural student. Caution should be taken with blanket generalizations and the inferential capacity of the data as it is limited to one rural community college.

Discussion

When the research began for this study, this researcher believed from his 12 years in a rural community college that females were going to be shown to be better students. The data generated from the study legitimized the researcher's anecdotal hypothesis. The finding that females are, on average, better students is not a complete blissful nirvana. Females should be praised for understanding the importance of a higher education, celebrated for their work ethic, and appreciated for not being afraid to take on technology. Today's female rural community college student is fearless and driven to attainment. The findings from this study should be used with caution as much as it should be used as a significant platform to start a serious dialogue.

After World War II, the GI Bill allowed veteran men access to a higher education at unprecedented levels. In the 1970s and 1980s, female specific programs were created encouraging women to go to college and to major in disciplines that were once male dominated. Females have methodically become the more significant gender in most areas of higher education. The female student owes a great deal of her ascent to a positive attitude and comprehensive study habit.

The study showed the impact that technology is having on the rural community college student of today. The findings showed that nearly every student is connected via broadband Internet or through a cell phone. The finding in the study pertaining to broadband penetration was extremely notable. The vast majority of rural students had access to a decent Internet connection. More research needs to be conducted particularly with broadband Internet access and academic technologies. There is no doubt that web based technologies and online education are important for access in the rural community college. However, critical analysis of rural broadband penetration would clarify the anecdotal conversations that are often used in the rural setting when making decisions about instruction, curriculum design, and student communication. Instructional techniques, curriculum development, and communications deployment would be better shaped with a more accurate understanding of the receiving audience. Technology usage in the rural community college is one of the tools available that will help level the playing field with other institutions, especially the four-year institutions.

Lastly, as a whole, the data is clear about studying and study habits. Neither females nor males excelled in the study habit findings. The rural community college student of today is faced with great financial, work, and home/life obligations. Faculty members must continue to be diligent with respect to rigor, and to not let the outside forces affecting the students drive the

content inside the classroom. Neither the student nor the rural community college comes out ahead if the content in the classroom is anything less than demanding. Studying is more than a collegiate skill, it is a life skill.

Chapter Summary

This chapter provides conclusions, discussion, and implications of the study, and it provided answers to the four research questions about study habits and technology use of rural community college students. This chapter also provided recommendations to other rural institutions for improvement in the field of student study habits and technology usage. Lastly, this chapter provided recommendations for further research so that this type of research may continue to gather information and to provide a wider and deeper data set.

CHAPTER VI

REFERENCES

Adelman, C. (1999). *Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment.* Department of Education, Office of Educational Research and Improvement, Washington, DC.

Babcock, P., & Marks, M. (2008). Leisure College, USA: The decline in student study time. *Education Outlook, 7*, 2-7.

Bahr, P. R. (2010). Preparing the underprepared: An analysis of racial disparities in postsecondary mathematics remediation. *The Journal of Higher Education, 81*(2), 209-237.

Bailey, T., Hughes, K., & Karp, M. (2002). *What role can duel enrollment programs play in easing the between high school and postsecondary education?* Community College Research Center, Institute on Education and the Economy, Teachers College, Columbia University.

Baldwin, A. (2007). *The community college experience: PLUS.* Pearson Prentiss Hall, Upper Saddle River: New Jersey.

Bednar, R., & Weinberg, S. (1970). Ingredients of successful treatment programs for underachievers. *Journal of Counseling Psychology, 17*, 1-7.

Bettinger, E., Long, B. (2007). Institutional responses to reduce inequalities in college outcomes: Remedial and developmental courses in higher education. *Economic inequality and higher education: Access, persistence and success.* New York: Russell Sage Foundation Press.

Boggs, G. (2010). Democracy's colleges: The evolution of the community college in America. *American Association of Community Colleges*. Retrieved from http://www.aacc.nche.edu/AboutCC/whsummit/Documents/boggs_whsummitbrief.pdf.

Boyd, D., & Ellison, N. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication, 13*(1), 210-230.

Brint, S. & Karabel, J. (1989). *The diverted dream: community colleges and the promise of educational opportunity in America, 1900-1985.* London: Oxford University Press.

Bugeja, M. (2006). Facing the Facebook. *The Chronicle of Higher Education, 52(*21*)*, C1.

Burnell, G. (2002). Courses you teach, resources they need. *Community College Week, 14*(15), 14.

Caven, J. (1995). The comprehensive mission of rural community colleges. Portrait of the rural community college. *New Directions for Community College, 90*, 9-16.

Cejda, B. (2007). Distance education in rural community colleges. *Community College Journal of Research and Practice, 31*(4), 291-303.

Center for Community College Student Engagement, (2009). *Making connections: Dimensions of student engagement (2009 CCSSE Findings). Austin, TX:* The University of Texas at Austin, Community College Leadership Program.

Center for Community College Student Engagement, (2006). Act on fact: Using data to improve student success *(2006 CCSSE Findings). Austin, TX:* The University of Texas at Austin, Community College Leadership Program.

Center for Community College Student Engagement, (2003). Engaging community colleges: National benchmarks of quality. *(2003 CCSSE Findings). Austin, TX:* The University of Texas at Austin, Community College Leadership Program.

Chang, K., & Logan, J. (2002). A comparison of accommodations and supports for students with disabilities in two-year versus four-year postsecondary institutions. Retrieved from: http://www.rrte.hawaii.edu/documents/products/phase3/08.pdf.

Charting a necessary path: The baseline report of public higher systems in the access to success. (2009). Retrieved from http://www.edtrust.org/sites/edtrust.org/files/ access2success/A2S_BaselineReport.pdf.

Chen, P., Lambert, A., & Guidry, K. (2010). Engaging online learners: The Impact of Web-Based learning technology on college student engagement. *Computers & Education, 54*(4), 1222-1232.

Chickering, A. W., & Gamson A. F. (1987). *Seven principles for good practice in undergraduate education*. Racine, WI: The Johnson Foundation, Inc.

Cohen, A. M., & Brawer, F. B. (2008). *The American college*. San Francisco: Jossey-Bass.

Choy, S. P. (2001). *Students whose parents did not go to college: Postsecondary access, persistence and attainment* (NCES 2001-126). National Center for Education Statistics, U.S. Department of Education. Washington, DC.

Choy, S. P. (2002). *Nontraditional undergraduates*, (NCES 2002-012). National Center for Education Statistics, U.S. Department of Education. Washington, DC.

Choy, S. P. (2004). *Paying for college: Changes between 1990 and 2000 for full-time dependent undergraduates* (NCES 2004-075). National Center for Education Statistics, U.S. Department of Education. Washington, DC.

Community college trends and statistics (n.d.) Retrieved from http://www.aacc.nche.edu/aboutcc/trends/pages/default.aspx.

Cotten, S. R. (2008). Students' technology use, the impacts on well-being. *New Directions for Student Services, 124*, 55-70.

Cresswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Pearson.

Dadgar, M., & Weiss, M. J. (2011). *To work or not to work: The effects of working while enrolled for community college students*. Retrieved from: http://www.aefpweb.org/sites/default/files/webform/AEFP_students%20employment_03 14111_final.pdf.

Dougherty, K., & Bakia, M. (2000). Community colleges and contract training: Content, origins and impact. *Teachers College Record, 102*(1), 197.

Duderstade, J. J., Atkins, D. E. & Van Houweling, D. (2002). *Higher Education in the digital age: Technology issues and strategies for American colleges and universities.* Westport: Greenwood Publishing.

Ebner, M., Lienhardt, C., Rohs, M. & Meyer, I. (2010). Microblogs in higher education—a chance to facilitate informal and process-oriented learning. *Computers and Education, 55*, 92-100.

Flowers, L., Pascarella, E. T. & Pierson, C. T. (2000). Information technology use and cognitive outcomes in the first year of college. *The Journal of Higher Education, 71*(6), 637-667.

Flowers, L., & Zhang, Y. (2003). Racial differences in information technology use in college. *College Student Journal, 37*(2), 235-242.

Gardner, J., & Hansen, D. (1993). Perspectives on the future of orientation. In M. L. Uperaft, R. H., Mullendore, B. O. Barefoot and D. S. Fidler (Eds.) *Designing successful transitions: A guide for orientating students to college* (pp.183-194). Columbia, SC: Freshman Year Experience.

Goldrick-Rab, S., Harris, D., Mazzeo, C., & Kienzl, G. (2009). *Transforming America's community colleges: A federal policy proposal to expand opportunity and promote economic prosperity.* Retrieved from http://www.brookings.edu/reports/2009/0507_community_college_goldrick_rab.aspx.

Grosseck, G., & Holotescu, C. (2009). *Can we use Twitter for educational activities?* Retrieved form: http://adlunap.RO/eLSE_publications/papers/2008.Grosseck%20 Cariela-Can%20we%use.pdf.

Grubb, W. N. & Associates, (1999). Honored by invisible: An inside look at teaching in community colleges. New York: Routledge.

Hassanbeigi, A., Askari, J., Nakhjavani, M., Shirkhoda, S., Barzegar, K., Mozayyan, M., & Fallahzadeh, H. (2011). The relationship between study skills and academic performance of university students. *Social and Behavioral Sciences*. *30*, 1416-1424.

Hawke, C.S. (2004). Accommodating students with disabilities. *New Directions for Community Colleges, 125*, 17-27.

Heiberger, G. & Harper, R. (2008). Have you Facebooked Astin lately? Using technology to increase student involvement. *New Directions for Student Services, 124*, 19-35.

Horrigan, J., & Murray, K. (2006). Home broadband adoption in rural America. Washington: Pew Internet & American Life Project. Retrieved from: http://www.pewinternet.org/Reports/2006/Home-Broadband-Adoption-in-Rural-America/Data-Memo.aspx?view=all

International Technology Education Association (2002). *Standards for technology literacy: Content for the study of* technology. Reston, VA: International Technology Education Association.

Jenkins, D. & Boswell, K. (2002). *State policies on community college remedial education: Findings from a national survey.* Denver, CO: Education Commission of the States, Center for Community College Policy.

Johnson, S. L. (1995). *Organizational structure and the performance of contract training operations in American community colleges.* Doctoral Dissertation, University of Texas, Austin (UMI#9617260).

Joiner, R., Gavin, J., Duffield, J., Brosnan, M. Crook, C. Durndell, A., & Lovatt, P. (2005). Gender, Internet identification, and Internet anxiety: Correlates of Internet use. *CyberPsychology and Behavior*, *8*(4), 371-378.

Jones, S. (2003). *The Internet goes to college: How students are living in the future with today's technology.* Washington: Pew Internet & American Life Project.

Junco, R. (2005). Technology and today's first-year students. In M. L. Upcraft, J.N. Gardner, (eds), and B. O. Barefoot (eds.), *Challenging and supporting the first-year student: A handbook for improving the first year of college. San Francisco: Jossey-Bass.*

Junco, R. & Cole-Avent, G. A. (2008). An introduction to technologies commonly used by college students. *New Directions for Student Services. 124*, 3-17.

Junco, R., Heibergert, G. & Loken, E. (2011). The effect of Twitter on college student engagement and grades. *Journal of Computer Assisted Learning. 27(*2*)*, 119-132.

Junco, R., & Mastrodicasa, J. (2007). *Connecting to the new generation: What higher education professionals need to know about today's students.* Washington, DC: NASPA.

Karsten, R., & Roth, R. (1998). Computer self-efficacy: A practical indicator of student computer competency in introductory IS courses. *Informing Science. 1*(3), 61-68.

Katsinas, S. G. (2003). Toward a classification system for community colleges based on institutional control, geography, governance, and size. *New Directions for Community Colleges,* 122, pp. 17-28.

Katsinas, S., & Moeck, P. (2002). The digital divide and rural community colleges: Problems and prospects. *Community College Journal of Research and Practice, 26*(3), 207-224.

Kleinglass, N. (2005). Who is driving the changing landscape in student affairs? *New Directions for Student Services, 112*, 25-38.

Knapp, L. G. (2003). *Enrollment in postsecondary institutions, Fall 2001 and financials statistics, fiscal year 2001* (E.D. Tabs No. NCES 2004-155). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Kuh, G. D. (2009). What student affairs professionals need to know about student engagement. *Journal of College Student Development, 50*, 683-706.

Kuh, G. D. (1990). The demographic juggernaut. In M. Barr, and M. Upcraft (eds), *Building a vision for professional leadership and practice.* San Francisco*:* Jossey-Barr.

Kuh, G., & Hu, S. (2001). The relationships between computer and info technology use, selected learning and personal development outcomes and other college experiences. *Journal of College Student Development, 42*, 217-232.

Kuh, G., & Vesper, N. (2001). Do computers enhance or detract from student learning? *Research in Higher Education, 42*, 87-102.

Lenhart, A., Madden, M., Macgill, A.,& Smith, A. (2007). Teens and social media. *Pew Internet and American Life Project.* Retrieved from http://www.pewinternet.org/Reports/2007/Teens-and-social-Media.aspx.

Levin, H., & Calcagno, J. (2008). Remediation in the community college: An evaluator's perspective. *Community College Review, 35(*3*),* 181-207.

McFadden, K., & Dart, J. (1992). Time management skills of undergraduate business students. *Journal of Education for Business. 68*, 85-88.

Mastrodicasa, J., & Kepic, G. (2005). *Parents gone wild*. Paper presented at the National Academic Advising Association, Las Vegas, Nevada, October 2005.

Merriam-Webster's Collegiate Dictionary. (2005). Springfield, MA: Merriam-Webster.

Miller, D. (2010). *Child care support for parents in community college is crucial for success, supply and funding are inadequate*. Retrieved from http://www.iwpr.org.

Miller, M. T., & Pope, M. L. (2003). Integrating technology into new student orientation programs at community colleges. *Community College Journal of Research and Practice, 27*(1), 15.

Miller, M. T., & Lu, M. Y. (2003). Serving non-traditional students in e-learning environments: Building successful communities in the virtual campus. *Education Media International, 40*(1), 163-169.

Miller, M. T., Pope, M. L. & Steinmann, T. D. (2005). Dealing with the challenges and stressors faced by community college students: the old college try. *Community College Journal of Research and Practice,* 29, 63-74.

Miller, M. T., & Tuttle, C. C. (2007). Building communities: How rural community colleges develop their communities and the people who live in them. *Community College Journal of Research and Practice, 31,* 117-127.

Miller, M. T., & Viajiar, P. (2001). The integration of technology in new student orientation programs. *Journal of College Orientation and Transition, 9*(1), 33-40.

Murray, N. O. (1997). Welcome to the future: The millennial generation. *Journal of Career Planning and Employment, 57*(3), 36-42.

Murrell, P. H., & Glover, J. W. (1996). The community college experience: Assessing process and progress. *Community College Journal of Research and Practice, 20*(2), 199-200.

National Survey of Student Engagement. (2011). *Fostering student engagement campuswide—annual results 2011*. Bloomington, IN: Indiana University Center for Postsecondary Research.

New Media Consortium, (2007). *The Horizon Report.* Retrieved from: http://www.nmc.org/pdf/2007Horizon_Ropert.pdf.

Nonis, S. A., & Hudson, G. I., (2006). Academic performance of college students: Influence of time spent studying and working. *Journal of Education for Business. 81*(3), 151-159.

Noy, M. W., & Jacobs, J. (2009). The outlook for noncredit workforce education. *New Directions for Community Colleges, 146*, 87-94.

Olsen, F. (2000). Campus newcomers arrive with more skill, better gear. *The Chronicle of Higher Education, 47*(10), A39-43.

Orr, M. T. (2002). Dual enrollment: Developments, trends and impacts. Presentation to the Community College Research Center, Teachers College, Columbia University. New York, New York, January 2002.

Orr, M. T. (2001). Community colleges and their communities: Collaboration for workforce development. In D. Bragg (Eds.), *The new vocationalism in community colleges.* San Francisco: Jossey-Bass.

Orr, M. T. (1998). Integrating secondary schools and community colleges through school-to-work transition and education reform. *Journal of Vocational Education Research, 23*(2), 93-113.

Oudenhoven, B. (2002). *Remediation at the community college: Pressing issues, uncertain solutions. New Directions for Community Colleges, 117*, 35-44.

Parker, K., Lenhart, A., & Moore, K. (2008). *The digital revolution and higher education: College presidents, public differ on value of online learning.* Washington, D.C.: Pew Research Center. Retrieved from: http://www.pewsocialtrends.or/files/08/online-learning.pdf.

Parsad, B., & Lewis, L. (2008). *Distance education at degree-granting postsecondary institutions* 2006-2007. U. S. Department of Education, National Center for Education Statistic, [NCES], 2009. Washington, D. C.: U.S. Government Printing Office.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco, CA: Jossey Bass.

Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1-6.

Provasnik, S., & Planty, M. (2008). *Community colleges: Special supplement to the condition of education 2008* (NCES 2008-033). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education: Washington, DC.

Pusser, B., & Levin, J. (2009). *Re-imaging community colleges in the 21st century.* Washington, DC: Center for American Progress.

Rankin, M. (2009). *Some general comments on the 'Twitter experiment'.* Web post by http://www.utdallas.edu/-mrankin/usweb/twitterconclusions.htm.

Reeves, T. C., & Osho, G. S. (2010). The satisfaction of community college students regarding distance education versus traditional education. *National Forum of Applied Educational Research Journal, 23*(3), 1-16.

Robyler, M., McDaniel, M., Webb, M., Herman, J., & Witty, J. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *Internet and Higher Education, 13,* 134-140.

Rosenbaum, J., Deil-Amen, R. & Person, A. E. (2006). *After admission: From college access to college success.* New York: Russell Sage Foundation.

Rural Community College Initiative (2001). *Expanding economics and educational opportunity in distressed rural areas*. Retrieved from: http://mdcinc.org/rcti/conframe.pdf.

Sakroeder, A., Menocha, S., & Schneider, C. (2010). The strengths, weaknesses, opportunities, and threats of using social software in higher and further education teaching and learning. *Journal of Computer Assisted Learning, 26,* 159-174.

Salaway, G. & Caruso, J., & Nelson, M. (2008). *The ECAR study of undergraduate students and information technology,* (No. 8). Boulder, CO: EDUCAUSE Center for Applied Research. Retrieved from: http://www.educause.edu/ecar.

Savukinas, R. (2003). *Community colleges and students with disabilities.* Retrieved from: http://www.Heath.gwu.edu/files/active/0/community_colleges_ and_ students.pdf.

Shulock, N., & Moore, C. (2007a). *Rules of the game: How state policy creates barriers to degree completion and impedes student success in the California community colleges.* California State University, Sacramento: Institute for Higher Education Leadership and Policy.

Smith, A. (2010). *Home broadband 2010.* Washington: Pew Internet & American Life Project. Retrieved from: http://www.pewinternet.org/Reports/2010/Home-Broadband-2010/Summary-of-Findings.aspx.

Smith, A., Rainie, L., & Zichuhr, K. (2011). *College students and technology.* Washington: Pew Internet & American Life Project. Retrieved from: http://www.pewinternet.org/Reports/2011/College-students-and-technology/Report.aspx.

Tapscott, D. (1998). *Growing up digital: The rise of the net generation.* New York: McGraw-Hill.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago*:* University of Chicago Press.

Twale, D. J., & Schaller, M. A. (2003). Mandatory computer purchases and student preparedness: Implications for new student orientation. *Journal of College Orientation and Transition, 10*(2), 60-69.

U. S. Department of Education, (2007). National Center for Education Statistics (2007). Report: The condition of education 2007. (NCES 2007-064), Washington, DC: U. S. Government Printing Office.

Van Noy, M., & Jacobs, J. (2009). The outlook for noncredit workforce education. *New Directions for Community Colleges*, *146*: 87-94.

Vaughn, G. B. (2006). *The community college story*. Washington, DC: Community College Press.

Wang, W. (2004). Community education in the community college. *Community College Review, 32*(3), 43-56.

Winning the skills race and strengthening America's middle class: An action agenda for community colleges, (2008). Retrieved from: http://professional.collegeboard.org/pdfdownload/Winning_the_skills_race.pdf.

Wirt, J., Livingston, A., Choy, S., Provasnik, S., Rooney, P., Sen, A., & Tobin, R. (2004). *The condition of education. (*NCES 2003-067). National Center for Education Statistics, U.S. Department of Education. Washington DC.

Ziegalhn, L. (2001). Considering culture in the selection of teaching approaches for adults. *ERIC Digest 231.*

APPENDICES

APPENDIX A

A SURVEY DEVELOPED FOR THE STUDY OF TRAIT DIFFERENCES IN GENDER WITHIN TECHNOLOFICAL USE AND STUDY HABITS OF RURAL COMMUNITY COLLEGE STUDENTS

Survey of Trait Differences in Gender within Technology Use and Study Habits of Rural Community College Students

The current study was designed to find out more about the technology use and study habits of community college students. Your participation in this survey is completely voluntary and no private information about you will be gathered. Should you have any questions, please contact Phillip Wilson, [redacted] or Dr. Michael Miller (479) 575-3582, University of Arkansas at Fayetteville. Thank you for taking time to participate in this survey.

Instructions: Please mark your answers by completely filling in the circle.

Part I. General information

1. Gender
   - o Male
   - o Female

2. Age
   - o 18-19
   - o 20-21
   - o 22-25
   - o 26-40
   - o 41+

3. Did either of your parents ever attend a college or university?
   - o Yes
   - o No

4. Overall GPA
   - o 0.00-0.99
   - o 1.0-1.99
   - o 2.0-2.99
   - o 3.0-4.0

5. Number of Semester Hours Completed at RMCC
   - o 0-14
   - o 15-29
   - o 30-44
   - o 45-60
   - o Over 60

6. Marital Status
   - o Single
   - o Married
   - o Separated/Divorced
   - o Widowed

7. Are you, or have you ever been enrolled in a developmental class (for example, Basic Math, Beginning Reading or English)?
   - o Yes
   - o No

8. Are you receiving financial aid?
   - o Yes
   - o No

9. Do you own a computer or laptop?
   - o Yes
   - o No

10. Do you have an Internet connection for your computer or laptop?
    - o Yes
    - o No

11. Do you own a cell phone?
    - o Yes
    - o No

12. How many hours a week do you study?
    - o 0-10
    - o 11-15
    - o 15-20
    - o Over 20

Part II. Information on your study habits and technology use

Please indicate how often you do the following by circling the number that corresponds most closely with how frequently you complete each (1=Never; 2=Seldom; 3=Sometimes; 4=Often; 5=Always):

13.	Study at home	1	2	3	4	5
14.	Study alone	1	2	3	4	5
15.	Visit the college's library	1	2	3	4	5
16.	Worked on a class project out of the class	1	2	3	4	5

17.	Study at the college	1	2	3	4	5
18.	Study in a small group.	1	2	3	4	5
19.	Meet your instructor out of class	1	2	3	4	5
20.	Make use of the available peer tutoring services (like SSS and LEAC)	1	2	3	4	5
21.	Come to class without completing readings or assignments	1	2	3	4	5
22.	Missed classes because assigned work was not complete	1	2	3	4	5
23.	Put in very minimum effort to get the grade desired	1	2	3	4	5
24.	Put in the very maximum effort to get the grade desired	1	2	3	4	5
25.	Type school work on a computer	1	2	3	4	5
26.	Do research from home on your computer	1	2	3	4	5
27.	Use study resources on a computer	1	2	3	4	5
28.	Use a college computer lab	1	2	3	4	5
29.	Access the library from home	1	2	3	4	5
30.	Use the Internet	1	2	3	4	5
31.	Use a computer for academic / school related reasons	1	2	3	4	5
32.	Use a computer for personal reasons	1	2	3	4	5
33.	Use your cell phone for academic / school related reasons	1	2	3	4	5
34.	Use your cell phone for personal reasons	1	2	3	4	5
35.	Use your cell phone to text message	1	2	3	4	5
36.	Send an instructor a text message	1	2	3	4	5
37.	Use e-mail for academic / school related reasons	1	2	3	4	5
38.	Use e-mail for personal reasons	1	2	3	4	5
39.	Send an instructor an e-mail	1	2	3	4	5
40.	Use Facebook for academic reasons	1	2	3	4	5
41.	Use Facebook for personal reasons	1	2	3	4	5
42.	Send an instructor a Facebook message	1	2	3	4	5

43.	Use Twitter for academic reasons	1	2	3	4	5
44.	Use Twitter for personal reasons	1	2	3	4	5
45.	Send an instructor a Twitter message (Tweet)	1	2	3	4	5
46.	Shop online	1	2	3	4	5
47.	Pay your bills or bank online	1	2	3	4	5

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

April 19, 2012

MEMORANDUM

TO:	Phillip Wilson Michael Miller
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	12-04-648
Protocol Title:	*Trait Differences in Gender within Technological Use and Study Habits of Rural Community College Students*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 04/18/2012 Expiration Date: 04/17/2013

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 200 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

210 Administration Building • 1 University of Arkansas • Fayetteville, AR 72701
Voice (479) 575-2208 • Fax (479) 575-3846 • Email irb@uark.edu

Rich Mountain Community College

1100 College Drive, Mena, Arkansas 71953
479-394-7622 www.rmcc.edu

April 12, 2012

To whom it may concern:

Phillip Wilson, a doctoral candidate at the University of Arkansas at Fayetteville, approached Rich Mountain Community College and asked for permission to survey a segment of our student population. We believe that Mr. Wilson's proposed research is relevant and important to our college. RMCC supports Mr. Wilson's efforts. He may begin entering classes as soon as he has received permission from the University of Arkansas at Fayetteville.

Respectfully,

[redacted]

Dr. Steve Rook
Vice President for Academic and Student Affairs

Table 1

Demographic characteristics		
Characteristic	N	%
1. Gender		
Male	58	37.9
Female	95	62.1
2. Age		
18-19	60	39.2
20-21	26	17.0
22-25	15	9.8
26-40	32	20.9
41+	20	13.1
3. Did either of your parents ever attend a college or university		
Yes	85	55.9
No	67	44.1
4. Overall GPA		
0.00-0.99	0	0
1.0-1.99	6	3.9
2.0-2.99	48	31.4
3.0-4.0	99	64.7
5. Number of semester hours completed at the college		
0-14	44	28.9
15-29	48	31.6
30-44	26	17.1
45-60	19	12.5
60+	15	9.9
6. Marital Status		
Single	96	62.7
Married	40	26.1
Separated / Divorced	16	10.5
Widowed	1	0.7

7. Are you, or have you been enrolled in a developmental class?		
Yes	67	43.8
No	86	56.2
8. Are you receiving financial aid?		
Yes	119	77.8
No	34	22.2
9. Do you own a computer or laptop?		
Yes	144	94.1
No	9	5.9
10. Do you have an Internet connection for your computer or laptop?		
Yes	124	81.0
No	23	15.0
Dial-up	6	3.9
11. Do you own a cell phone?		
Yes	148	96.7
No	4	2.6
12. How many hours a week do you study?		
0-10	93	60.8
11-15	37	24.2
15-20	17	11.1
Over 20	6	3.9

Table 2

Self-reported frequency usage of study habits of rural community college students on a 1 (never) to 5 (always) scale

Study habits	M	SD	% "Never"	% "Always"
13. Study at home	3.65	1.07	2.6	26.1
14. Study alone	4.03	1.07	3.9	40.5
15. Visit the college's library	2.80	1.25	17.0	11.1
16. Worked on a class project out of the class	3.43	1.17	7.8	19.6
17. Study at the college	2.75	1.24	18.4	8.6
18. Study in a small group	2.08	1.12	36.6	3.9
19. Meet your instructor out of class	2.23	1.06	28.3	3.9
20. Make use of the available peer tutoring services	2.30	1.29	34.6	9.2
21. Come to class without completing readings or assignments	2.26	0.93	19.6	1.3
22. Missed class because assigned work was not complete	1.53	0.86	64.1	2.0
23. Put in the very minimum effort to get the grade desired	2.03	1.04	38.2	2.6
24. Put in the very maximum effort to get the grade desired	3.86	0.99	2.6	28.1

Table 3

Self-reported frequency usage of technology use of rural community college students on a 1 (never) to 5 (always) scale

Technological use		M	SD	% "Never"	% "Always"
48.	Type school work on a computer	4.20	0.93	2.0	46.4
49.	Do research from home on your computer	3.87	1.24	9.2	37.9
50.	Use study resources on a computer	3.71	1.15	4.6	30.3
51.	Use a college computer lab	2.93	1.39	18.3	19.0
52.	Access the library from home	2.01	1.29	52.3	7.2
53.	Use the Internet	4.52	0.81	0.7	68.0
54.	Use a computer for academic / school related purposes	4.10	0.92	1.3	41.2
55.	Use a computer for personal reasons	4.09	1.11	3.3	48.4
56.	Use your cell phone for academic / school related reasons	2.78	1.27	20.3	11.1
57.	Use your cell phone for personal reasons	4.33	1.08	3.3	64.1
58.	Use your cell phone to text message	4.22	1.24	7.3	62.3
59.	Send an instructor a text message	1.65	0.99	61.2	2.6
60.	Use e-mail for academic / school related reasons	3.52	1.15	6.5	22.9
61.	Use e-mail for personal reasons	3.44	1.37	11.8	29.6
62.	Send an instructor an e-mail	3.22	1.21	11.8	15.1
63.	Use Facebook for academic reasons	1.89	1.12	50.0	3.9
64.	Use Facebook for personal reasons	3.70	1.55	17.1	48.7
65.	Send an instructor a Facebook message	1.42	0.92	76.5	3.3
66.	Use Twitter for academic reasons	1.11	0.49	93.5	0.7
67.	Use Twitter for personal reasons	1.60	1.34	81.0	11.1
68.	Send an instructor a Twitter message (Tweet)	1.07	0.40	95.4	0.7
69.	Shop online	2.92	1.36	22.4	15.1
70.	Pay your bills or bank online	2.62	1.53	39.1	15.9

Table 4

Significantly different independent *t*-tests in study habits by gender (3 lowest *p* values)					
		n	M	SD	*t*-test
14. Study at home	Male	58	3.24	1.19	*t*(151)=3.60 *p*=0.001
	Female	95	3.89	0.91	
20. Meet your instructor out of class	Male	57	2.51	1.18	*t*(150)=2.41 *p*=0.018
	Female	95	2.06	0.95	
25. Put in the very maximum effort to get the grade desired	Male	58	3.53	1.14	*t*(151)=3.059 *p*=0.003
	Female	95	4.06	0.84	

Notes. *$p<.05$. The *p value less than .05 suggests that the results are significant.

Table 5

Not significantly different independent *t*-tests in study habits by gender (3 highest *p* values)					
		n	M	SD	*t*-test
19. Study at the college	Male	57	2.82	1.23	$t(150)=0.58$ $p=0.566$
	Female	95	2.71	1.26	
20. Study in a small group	Male	58	2.14	1.19	$t(151)=0.45$ $p=0.650$
	Female	95	2.05	1.09	
21. Make use of the available peer tutoring services	Male	58	2.28	1.34	$t(151)=0.19$ $p=0.853$
	Female	95	2.32	1.27	

Notes. $*p<.05$. The $*p$ value greater than .05 suggests that the results are not significant.

Table 6

Significantly different independent *t*-tests in technology use by gender (5 lowest *p* values)					
		n	M	SD	*t*-test
36. Use your cell phone for personal reasons	Male	58	4.03	1.30	$t(151)=2.501$ $p=0.014$
	Female	95	4.52	0.87	
37. Use your cell phone to text message	Male	58	3.88	1.45	$t(149)=2.51$ $p=0.014$
	Female	93	4.43	1.05	
38. Use e-mail for academic / school related reasons	Male	58	3.14	1.21	$t(151)=3.349$ $p=0.001$
	Female	95	3.76	1.05	
40. Send an instructor an e-mail	Male	58	2.90	1.21	$t(150)=2.663$ $p=0.009$
	Female	94	3.43	1.18	
42. Use Facebook for personal reasons	Male	58	3.31	1.68	$t(150)=2.408$ $p=0.018$
	Female	94	3.95	1.42	

Notes. $*p<.05$. The $*p$ value less than .05 suggests that the results are significant.

Table 7

Not significantly different independent *t*-tests in technology use by gender (5 highest *p* values)					
		n	M	SD	*t*-test
30. Access the library from home	Male	58	1.95	1.30	$t(151)=0.437$ $p=0.663$
	Female	95	2.04	1.28	
33. Use a computer for personal reasons	Male	58	4.03	1.18	$t(151)=0.496$ $p=0.621$
	Female	95	4.13	1.06	
44. Use Twitter for academic reasons	Male	58	1.12	0.42	$t(151)=0.187$ $p=0.852$
	Female	95	1.11	0.54	
46. Send an instructor a Twitter message	Male	58	1.09	0.34	$t(151)=0.346$ $p=0.730$
	Female	95	1.06	0.43	
48. Pay your bills or bank online	Male	57	2.67	1.52	$t(149)=0.316$ $p=0.752$
	Female	94	2.59	1.55	

Notes. $*p<.05$. The $*p$ value greater than .05 suggests that the results are not significant.